STANDING COMMITTEE ON CROWN AND CENTRAL AGENCIES

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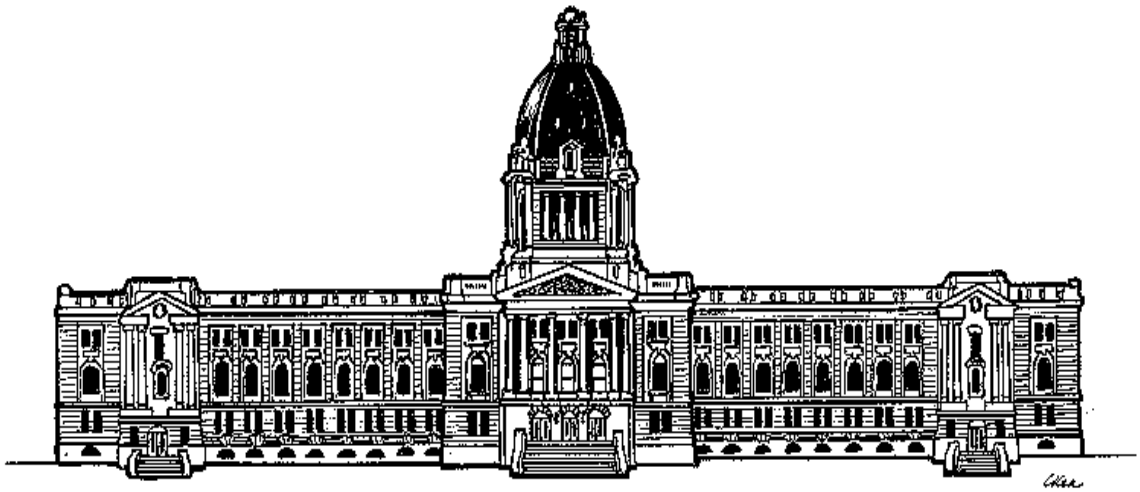

Legislative Assembly of Saskatchewan

Twenty-sixth Legislature

STANDING COMMITTEE ON CROWN AND CENTRAL AGENCIES

Mr. Tim McMillan, Chair
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Mr. Trent Wotherspoon
Regina Rosemont

Published under the authority of The Honourable Don Toth, Speaker

[The committee met at 10:00.]

Inquiry Into the Province's Energy Needs

The Chair: — Good morning. Welcome everyone to the meeting of the Standing Committee on Crown and Central Agencies. Today is the fifth day of our committee's inquiry into Saskatchewan's energy needs. I am Tim McMillan, Chair of the committee. I would also like to introduce the members of the committee: Denis Allchurch, Fred Bradshaw, Dan D'Autremont, Randy Weekes, Buckley Belanger, Trent Wotherspoon. And other members that are joining us today: Darryl Hickie, Sandra Morin, and Len Taylor.

All of the committee's public documents and other information pertaining to the inquiry are posted daily to the committee's website. The committee's website can be accessed by going to the Legislative Assembly of Saskatchewan website at legassembly.sk.ca, under What's New and clicking the link to the Standing Committee on Crown and Central Agencies. The hearings will be televised across the province on the legislative television network, with audio streaming available for the meetings outside of Regina. Check the website for information regarding locations, cable companies, and channels. And meetings will also be available live on the website with past proceedings archived on the website as well.

Before we hear from our first witness, I would like to advise witnesses of the process of presentations. I will be asking all witnesses to introduce themselves. Please state your name and if applicable your position with the organization you represent. If you have a written submission, please advise that you would like to table your submission. Once this occurs, your submission will be available to the public. Electronic copies of tabled submissions will be available on the committee's website.

The committee is asking all submissions and presentations to focus on the following question. The question is, how should the government best meet the growing energy needs of the province in a manner that is safe, reliable, and environmentally sustainable while meeting any current and expected federal environmental standards and regulations and maintaining a focus on affordability for Saskatchewan residents today and into the future?

Each presentation should be limited to 15 minutes. We have set aside 10 minutes for question-and-answer. Once your presentation is completed, the committee members may have questions for you. I will direct questions and recognize each member that is to speak. Members are not permitted to engage witnesses in any debate, and witnesses are not permitted to ask questions of committee members. I would also like to remind witnesses that any written submissions presented to the committee will become public documents and will be posted to the committee's website for public viewing.

I have also talked to our first presenter, and he is willing to answer questions beyond the 10-minute question-and-answer period leading up to five minutes to the top of the hour. So with that I would ask our first presenter to take it away.

Presenter: Saskatchewan Environmental Society

Mr. Prebble: — Thank you so much, Mr. Chair. It's a privilege to be before all of you this morning and nice to see my former colleagues in the Assembly. I do miss sharing time with you.

My name is Peter Prebble. I'm director of energy and water policy with the Saskatchewan Environmental Society. And I'm here representing the Environmental Society this morning, and Ann Coxworth is also in the audience this morning with the society.

We'd like to begin by reaffirming our long-held view that nuclear power is not the direction to go in this province, but more importantly we want to lay out what we think is the direction to go this morning.

But let me begin by just saying that we feel that Bruce Power's proposal for a nuclear reactor or any other proposal that might come forward for a large-scale nuclear power plant is not a wise direction to go for three reasons. First of all, as you can see from our submission, the economics of nuclear power are not attractive. They weren't attractive in the 1970s and 1980s either. I think that's probably the major reason why most private US [United States] utilities abandoned nuclear power by the mid-'70s.

And Ontario's experience bears mentioning again: a debt of $30 billion, most of which was run up by the nuclear power program; huge cost overruns — for instance the Darlington reactor when it was built tripled in cost and ended up costing taxpayers $14 billion. Ontario residents still pay a regular fee every month on their electricity bill to pay off $20 billion of stranded debt that Ontario Hydro faced as a result of that experience.

And this is being repeated today around the world. If you look at Bruce Power's feasibility study and some of the reactor projects that are being referred to there, you see for instance that they reference the Finland project that's being built by Areva. And it's interesting they reference that because since they did, there's been huge cost overruns. That project is now coming in at $8.6 billion instead of the projected $5.3 billion. It's three years behind schedule.

Similarly they referenced the advanced CANDU design by AECL [Atomic Energy of Canada Ltd.]. And now we have an estimate for what that reactor is going to cost, and a very similar sized project to the one here in Saskatchewan that's being proposed — 2400 megawatts instead of 2200 megawatts — estimated cost, $26 billion. So I just want to warn committee members that the estimates provided by Bruce Power — and by the way, by SaskPower — for the cost of constructing reactors are underestimates.

Secondly I just want to draw to your attention as well that there are significant costs associated with repair to nuclear reactors. You can see that with Bruce Power's proposal right now, and its work on retrofitting the unit 2 reactor project that it runs in Ontario. These repair costs have now run up to $3.4 billion.

Then you've got the cost of decommissioning a reactor, and we

draw your attention in this submission to the costs in the United Kingdom. Originally the UK [United Kingdom] had estimated — and this is for all 20 of their reactors, including their reactor that runs for their nuclear weapons program — that the costs of decommissioning would come in at around 12 billion pounds. The UK government last year revised those decommissioning estimates to 73 billion pounds.

Decommissioning is very expensive. You have to, you know, essentially cut up the reactor core and truck away thousands of truckloads of radioactive material. This is an expensive endeavour. And then there's the cost of course of disposing of the high-level radioactive waste. We've just seen the US invest $11 billion in a high-level radioactive waste repository. It now appears after spending 11 billion that they are going to abandon the facility or at least not move forward with it at this point in time.

So all of these costs are significant. And this brings us to the second reason why we believe that at this point in time an investment in nuclear power is not wise, and that is because the problem of disposing of the used uranium fuel after it's been utilized in a nuclear power plant is a very challenging and difficult one as well as being expensive. It's not at all clear that we can keep these wastes out of groundwater. And this is very problematic as both the Americans and the Germans have discovered, and we should not have a lot of confidence that we can do this in Canada.

We may ultimately need to proceed, but we shouldn't create any more of this waste material — which is of course what a reactor proposal here would do — and we shouldn't burden Saskatchewan residents with the need to, the next generation will be left with the need to find a way of disposing of this waste material, even though they may not benefit from the electricity that's generated from the reactor.

So these wastes are toxic. They're intensely radioactive, and they will be radioactive for tens of thousands of years and need to be kept out of the environment for that length of time. The volume of the waste is not large, but the challenge of disposing of them is exceptionally difficult.

And I just wanted to add here that, you know, wherever waste repositories proceed, there is intense opposition. And you can see that in Germany, where the German government required 20,000 police to escort the first waste shipment to the repository. All of these comments, by the way, are referenced in this document. And similarly, the state of Nevada fought the American government for years on waste disposal. So you divide your population when you proceed with nuclear power, rather than uniting them around what we think are much better alternatives — particularly renewables.

[10:15]

In the second part of our brief, we focus on the potential for developing renewable energy in the province and the potential for energy efficiency. We believe this is where the next set of public investments around electricity generation should go in the province of Saskatchewan.

We are pleased to see that SaskPower is proposing some demand-side management. I guess what we're recommending in this brief, Mr. Chair, members of the committee, is that SaskPower's targets for demand-side management be increased. We're suggesting here 500 megawatts, which we believe is quite feasible.

You know, traditionally SaskPower has spent, in the years that I was in government at least, about $1 million a year or less on energy efficiency. Meanwhile next door, Manitoba Hydro was spending 35 to $40 million a year on electricity efficiency. In US states like Vermont and California, much, much larger numbers than that are being spent.

We are recommending something in the range of a 2 to $3 billion investment in electricity efficiency over the next decade. In other words, think about it in the same way that you think about investing in a power plant. And we think there is lots of evidence around the world to support that this is the most cost-effective way to go.

The difficulty that SaskPower has right now, we've got a great group of folks in SaskPower, but very little expertise in this area. Very little knowledge about how to do this on a large-scale basis. This really needs to be changed. We can't just have four or five people working on electricity efficiency. You need 50 to 100. When I walk into Vermont, and I visited their electricity efficiency division in the state of 650,000 people, they have 115 people who work full-time on electricity efficiency. And for every dollar they spend on electricity efficiency, they save the taxpayers of Vermont $1.70. The economics of this are very attractive.

Right now we're producing electricity in this province, SaskPower reports from their submission, at less than 6 cents a kilowatt hour. There are no new generation options that can compete with this. Electricity efficiency does compete with this. And what it means is establishing rebates for every kind of use of electricity. So if you're a farmer and you want to install electricity-efficient irrigation, you get a rebate for doing that. If you are a business person and you want to retrofit all your lights with the most super-efficient lighting possible, or the most energy efficient refrigeration facilities possible in your restaurant, you get a rebate for doing that.

And these are rebates that, in states like Vermont and California, are designed to have very attractive payback periods. And all of that can be done for less than 6 cents a kilowatt hour. And you do it right across the board, not just for lighting or refrigeration, but you do it for all the uses of electricity in industry. This is a fundamental shift in the way we do business in the province of Saskatchewan.

We're also suggesting that we're pleased to see the suggestions that SaskPower has made for investing in renewables. It's clear that they propose at least 600 megawatts of renewable energy development by 2022. We're recommending here that committee members look at extending that to 1000 megawatts. We think there's opportunity for at least 800 megawatts of new wind power development between now and 2020.

We don't agree with SaskPower that the problems around integrating wind into the grid are insurmountable. I say that based on having had a lot of conversations with grid managers

in countries like Germany and Spain and Denmark, where they have succeeded in integrating in parts of those countries as much as 30 per cent wind power into the grid. And nationally, they're hitting targets of 18 to 20 per cent.

So more wind can be done, and SaskPower needs to go to the best wind integration folks in the world to get advice about how to do this. But 800 megawatts would only take us, by 2020, to meeting 15 per cent of our electricity demand through wind. And it's already being done at 20 per cent in at least two countries in the world. So this is doable.

And with respect to biomass and small-scale hydro development, again I think we share SaskPower's view that there's opportunity for this in Saskatchewan. I want to be cautious about how much biomass we do because of the state of the forestry industry in the province right now. But I think 50 megawatts would be very doable. And we could also do some landfill gas in Saskatoon and Regina and probably get another 20 megawatts there.

In addition to that, in northern Saskatchewan we need to work with the First Nations and Métis communities of the North, and obviously the pace of development should be very much guided by their judgment calls. But if they are interested, I think there is opportunity for at least 125 megawatts of small-scale, low-impact hydro in northern Saskatchewan. All of this makes a nice package of about 1000 megawatts of new renewable energy development by 2020. And we think this is a sensible target.

Finally, we think there's a good opportunity for expanding cogeneration of electricity in Saskatchewan. Probably one of the best opportunities is at our potash mines where we can do industrial steam processing and electrical generation at the same time, as we do at Cory right now, with a much more efficient use of natural gas than just a regular natural gas generating station. So we think a couple of hundred additional megawatts of cogeneration would be very attractive and cost-effective.

And I just want to emphasize that all of these options, in our judgment, are less expensive than a nuclear reactor in the province of Saskatchewan. They also make for better grid stability. If one unit is down, the size of the unit is not all that large and it's easy to back it up. If a nuclear reactor is down for a few weeks — which inevitably they are — you're looking at 1100 megawatts of backup capacity being required. And you have to put that in place, and that's expensive.

So we also think that this alternative is better because it generates employment activity right across the province, instead of employment being focused in one region of the province around the construction of a reactor.

Finally, I want to turn to some other measures that we'd like to see happen. And you can see these on the last two pages of our presentation. We'd like to see SaskPower's mandate updated so that, for example, it's required to invest in electricity efficiency whenever that's more cost-effective than other electricity generation alternatives.

We'd also like to see a renewable portfolio standard established in the province that sets in law renewable energy targets that SaskPower should meet. This is standard practice in at least half the US states now. We would like to see an energy efficiency code for the province that sets standards for energy efficiency in all new building construction. This is standard practice again in the US — 46 of 50 states do this. All of Western Europe does this. We're living in one of the coldest parts of the world, and yet we don't do this in the province of Saskatchewan.

We'd also like to see, if you flip over to the last page, we'd like to see wind farm co-ops being encouraged in the province of Saskatchewan. We'd like to see rural municipalities also encouraged in expanding the wind power network, and this could be done in partnership with SaskPower. They could be co-owners of wind power facilities.

We would like to see the Government of Saskatchewan introduce a clean energy Act similar to the one that's been introduced in Ontario — and I'd be happy to answer more questions about that in the question period — but key in this Act is measures for feed-in tariffs to promote renewable energy. We think that would be a wise move in Saskatchewan as well.

And finally we'd like to see a series of initiatives in demonstration projects and in training in the province of Saskatchewan that would encourage the development of renewable energy. All our electricians, for example, should be trained at SIAST [Saskatchewan Institute of Applied Science and Technology] to install solar photovoltaic systems so that they're ready for that when the price of solar PV [photovoltaic] drops. The university and SIAST campuses should be places where renewable energy is demonstrated and where greenhouse gas emission reduction targets are set and met on a demonstration basis.

We'd also like to see demonstration projects happening in rural Saskatchewan, rural communities that want to step up and reduce their greenhouse gas emissions, and at the same time shift in a big way from fossil fuels to renewables in terms of how they meet their space heating and electricity generation needs.

And finally we'd like to see the Government of Saskatchewan work with our cities in encouraging new subdivisions that are built entirely on renewable energy. This is being done in Europe. It's being done very successfully. There's no reason why we cannot replicate that here.

In conclusion, Mr. Chair, I just want to say that we already know how to build homes that are 90 per cent more energy efficient than the average house. The Saskatchewan Research Council and the private building sector and the Office of Energy Conservation demonstrated in 2007 that this could be done in Regina at an incremental cost for housing of only 12 per cent of the cost of a house. We'd like to see that kind of a house demonstrated in every city in Saskatchewan, ideally in every large town in Saskatchewan. And you know, the public should tour through these homes and be supported in building to that kind of a standard in this province.

So I hope these provide some suggestions that are useful for the reflection of the committee. And on behalf of the Environmental Society, I'm very honoured to be able to make this presentation. Thank you.

The Chair: — Great. Well thank you very much for your presentation this morning. Mr. Weekes has some questions to start off with.

Mr. Weekes: — Thank you, Mr. Chair. Good to see you again, Mr. Prebble. I don't have to call you by your constituency name now that you're not a member. But, Peter, as always you give a very good presentation, well-researched and thought-out presentation. Going back to your legislative days when you were a Legislative Secretary on this topic, could you just elaborate a bit more on your work and what you did to bring your report out? I believe your report is a public report. Could you elaborate a bit on where you went to find out information about the whole energy field and touch on those areas?

Mr. Prebble: — I think, Randy, that one of the really interesting places to look in terms of innovation in the energy field is in some of the US states like Vermont and Oregon. You know, Vermont's a little smaller than us; Oregon's about three times bigger than us, but it's not so much bigger that it's not applicable. And I feel like some of those states are doing with energy what we did with health care. And sometimes I've, you know, joked with them — and the people I've chatted with have agreed — that we should send a bunch of our folks down to their state to help them get their health care system in order, and they might send a few people up here to help us with developing energy efficiency and renewables.

But you know, when you walk into Efficiency Vermont for instance you see a very different approach from what Saskatchewan Power Corporation takes. You've got 115 staff there in a state of 650,000. They know the industrial and commercial facilities in their state, and they've visited the farms in their state.

And when a piece of equipment breaks down at a commercial facility, the job of Efficiency Vermont is to help the owner be able to replace that within 24 hours with the most energy-efficient piece of equipment that's available. So just take for example, if it's a motor, a big motor that's broken down, the Efficiency Vermont people will say to the owner of the building, we'll provide you with a rebate that will cover the cost difference between a motor with average efficiency and the most efficient motor on the market, and we will help make sure that you can access that from a wholesaler. And we know you need to replace this immediately, so we're working out these arrangements within 24 hours. And that will be done.

Now we don't do that kind of thing at SaskPower, but we need to. You know, that's the difference — whenever a piece of equipment needs to be replaced in Vermont, that's viewed as an opportunity to achieve electricity efficiency. And financial rebates are put in place to make sure that that's done, both in a way that's cost-effective for the taxpayer and for the business owner. And that's done obviously at the residential level; it's done at the farm level; it's done at the industrial level.

And the staff in Efficiency Vermont have been in almost every facility already so that when that piece of equipment breaks down, they know what the building owner is talking about, and they can advise with precision on what the replacement should be. That makes for a whole new regime in terms of electricity efficiency. And if we take that approach in the province of Saskatchewan, we'll save ratepayers big dollars.

[10:30]

But you've got to have a staff that's capable of doing this, and SaskPower would not be capable of doing this today. It does not have the expertise. It does not have the staff that are trained. But it can change that quickly. You know, I mean, Saskatchewan people can do this. It's simply a matter of putting the training in place, bringing in some help for a year or two, getting our staff up and running. There's absolutely no reason why we can't replicate what Vermont has done or what Oregon has done.

In Oregon for instance building codes are standard practice. And what the government of Vermont does through its office of energy conservation is it's constantly updating the energy efficiency codes for new construction. But it's doing that in concert with a series of financial rebates for homeowners and commercial businesses. So for instance, it updates the energy efficiency codes for new construction every five years. And then a new set of rebates comes along that is designed to encourage people in Oregon to build to an even higher standard of efficiency. And once you've got 20 or 30 per cent of the population moving to that and taking advantage of those rebates, you then move the energy efficiency code to the level that the financial rebates were supporting and up the financial rebates again. You just do this in jumps, you know, every five to eight years.

Oregon has achieved significant savings through that. They've advised me that half their savings are achieved through their codes and this method of moving financial rebates and codes together. And they have a much, you know, they have a generous system of rebates. It's really paid dividends for taxpayers, and it means for homeowners — just to take homeowners as an example — that they're living now in much more energy-efficient housing than they would have been before. They're much less vulnerable to spikes in utility bills.

Interesting to see states that are . . . You know, I mean they don't have a lot of fossil fuel resources in comparison to us so they're forced to take these energy efficiency issues more seriously, but it pays them big economic dividends and creates a lot of employment in their states. I think we should add this to our mix in the province of Saskatchewan.

Mr. Weekes: — Mr. Chair, may I have a follow-up? Thank you. Your legislative report or your Legislative Secretary report that you submitted is a public document. I'm hoping that this committee could have that tabled and be part of our committee as well. Just one follow-up: did you travel to Europe as well, and if you did, what did you find out there that was significant to this area?

Mr. Prebble: — I made one trip to Denmark, Sweden, and Germany in January 2007, Randy, and at that point I looked at a variety of things. I looked at wind policy in those jurisdictions. I talked to people who were in the wind industry and also managing utility grids and people at the universities in Denmark about how to achieve deeper levels of wind power on the grid and was assured that . . . You know, the utility operators in Denmark started off thinking that they couldn't do more than 500 megawatts in the country and discovered as they tried to

move forward with wind, at the direction of the Danish government, that they could achieve a lot more and that they could coordinate that wind very effectively with Norwegian hydro.

So what the Danes do is — and we could do this with Manitoba; we could have a prairie wind power regime and we could coordinate it with Manitoba Hydro — the Danes coordinate their wind with Norway. And if the wind fades in Denmark, Norwegian hydro kicks in, and they've got that timed right down to the minute.

We could do the same with Manitoba Hydro, or we could do it to some degree with coordinating wind and hydro in the province of Saskatchewan at some level. If you start getting up 20 per cent wind power, we couldn't probably coordinate it all with our hydro in this province. We'd need to, you know, we'd need to import hydro from Manitoba as well.

But hydro and wind go very nicely together, and the coordination costs are very low. And you can see this in Washington right now where wind and hydro are being coordinated together, a 63-megawatt wind project, a 65-megawatt hydro project, and the coordination costs are point zero nine cents per kilowatt hour. That is very attractive.

I also saw a number of demonstration projects. For instance I went to Samsø Island. I visited with a whole bunch of people on Samsø. I visited in communities, rural communities, have made a transition in a decade from fossil fuels to renewables. The whole of Samsø Island has made a conversion now, 4,100 people, completely to renewables for space heating and for electricity generation. For electricity generation it's all wind. For space heating it's a mix of solar and biomass, and they basically use district heating, and the energy source for that is biomass or solar. And it's really interesting to see Samsø doing this with a wind resource that is not as good as ours but pretty good, with a solar resource that is nothing like ours. And they struggle actually with how little sun they get relative to, say, what we get. So for them to be doing this is quite remarkable, and they've done it successfully within a decade, and they've created a lot of local jobs by doing it.

The Chair: — Mr. Belanger.

Mr. Belanger: — Just in terms, and certainly a lot of . . . Hi Peter. Impressive amount of work done in your report, and of course learning from many other countries. Bringing that knowledge to Saskatchewan is pretty valuable not only to government in general but the people of Saskatchewan.

From a northern perspective, you talk a bit about the biomass, and I'm assuming you looked at the notion of wood heat. I'll give you an example of me as a consumer. I burn wood heat. I use wood for my home. It's better heat and it's easily accessible. So I try not to turn my oil furnace on. Has there been any studies or any knowledge you have that could share with the people of Saskatchewan the value of wood heat versus your traditional — as in northern Saskatchewan don't have natural gas — as opposed to your fuel oil furnace? Is it the same or is it a lot less? How do you figure it out?

Mr. Prebble: — In terms of greenhouse gas emissions, Buckley, it will be better. I think the first thing that we should support northerners doing, just kind of speaking more generally about the North for a minute — since so many northerners are obviously needing to rely on electricity for heating their homes — is that we should launch a major energy conservation program in the North that provides huge financial assistance in northerners upgrading their homes in terms of energy efficiency, so they don't need to use as much electricity.

And then the other options for heating, you know, I mean the thing about wood is that, you know, you roughly break even in terms of greenhouse gas emissions. But sometimes if you've got a lot of people heating with wood, as you know, there are other . . . You know, you can have particulate problems and respiratory issues if you have a whole community doing that, obviously. So I think the biggest thing to do in northern Saskatchewan is to help everybody make their homes a lot more energy efficient. And northerners deserve extra financial assistance than the rest of the population in doing that because they're needing to heat with electricity. It's very expensive. And for those who do heat with wood heat, well they're probably making a very wise decision from an economic point of view.

I think the biggest thing to do for the North is invest in a big energy efficiency program. And I really feel that all Saskatchewan people should help the residents of northern Saskatchewan in doing that.

Mr. Belanger: — Yes, I certainly echo those sentiments. In your discussion as a northern MLA [Member of the Legislative Assembly] — and I'm sure that you will get the corresponding information from my other colleague from the Cumberland constituency — in northern Saskatchewan it's not unusual to have a 350, $400 power bill in some of these northern communities. And while the rate is the same across the province, again if you're using electric heat, or even if you're not, without electric heat you're looking at at least 200 to $250 a month. That's what I pay each month. And then if you use electric heat, you can almost be certain that it's doubled. And if people don't believe that, then get a hold of one of the Indian bands and they'll tell you what they pay through their social assistance department in terms of some of the costs for power.

So when one looks at a 250 to $500 a month power bill in northern Saskatchewan, energy conservation and wood heat become very, very attractive. Have you any professional or expert people, people that we might want to talk to as a committee or even as MLAs in terms of looking at how to begin the process of efficiencies within the home and doing a study to transition from your traditional electric heat to wood heat as alternatives?

Mr. Prebble: — I can certainly provide you with names of people who would offer good advice on helping northern homes be more energy efficient. And we could put, you know, submit something to the committee and to you, Buckley, on that.

On wood heat, I don't have a lot of expertise over and above . . . I mean, I use it myself a little bit at home as a supplement to my natural gas and I've been happy with it. And I take it you're happy with it too. And I agree it's more cost-effective for people in northern Saskatchewan.

I really think one of the things we should look at in some of our northern communities where homes are close together — they have to be close together for this — but I think we should look at district heating systems. I think what you want to do is look at a small biomass plant, say a community like, I'll just use Pinehouse as an example. You know, it would be feasible in Pinehouse to build, to generate electricity, say 2 to 3 megawatts using wood waste biomass, and then to take the waste heat from that electrical generating station and distribute it to every home in Pinehouse as a way of heating that home.

And that would be a great demonstration project for the Government of Saskatchewan to support, not necessarily in Pinehouse but in a northern community, where that could be modelled and tested. And if it worked, it could be applied to other communities in the North. But district heating will only be cost-effective for homes that are living relatively close to one another.

Mr. Belanger: — Two quick more questions. Number one is that when you talk about policy development, I know in northern Saskatchewan people are forced to go to wood heat primarily because of, again, it's a better heat and it's less expensive than fuel oil.

But we notice a problem though, is the moment you start going to wood heat, all of a sudden the insurance companies don't like that, including our own Saskatchewan Government Insurance. They resist that. They say okay, wood heat, yes, fine, nobody wants to see their house burn down.

But all of a sudden, if you start looking at the northern part of Saskatchewan, you're denied insurance if you don't follow strict guidelines. And the insurance always goes up when you use wood heat and there's all different kinds of rules. It's almost as if the insurance companies are telling us no, we don't want to see wood as your alternative heat or your backup heat. So they really jack up the cost of insuring your homes if you burn wood.

Do you think that that's one of the policy areas that ought to be looked at, if you want to encourage alternative or secondary heat sources for northern Saskatchewan residences, to relax that requirement?

Mr. Prebble: — Yes. Well, Buckley, I think insurance issues need to be looked at right across the board in terms of alternatives, and wood heat is a good example. I think installation of renewables is a good example because you want to make sure you've got full coverage on renewables that you install. And I think one of the things that we should encourage in northern Saskatchewan is, where it's suitable, where you've got good access to sunlight, the installation of solar hot water, you know, again to kind of drive down electricity costs and also to reduce the amount of wood that needs to be used for a homeowner that decides to go that way because there's absolutely no reason why most — say at least half — of solar hot water needs, half of hot water needs for instance, couldn't be met through the installation of solar panels.

But again, you know, most people in northern Saskatchewan don't have the resources to be able to finance that and would need additional financial help to do that. But I think there's a strong rationale for that because, from the point of view of SaskPower, it's a great way of reducing their need for new electricity generation if they take these measures. So there's cost savings for the taxpayers and therefore justification I think for more financial assistance than there is in southern Saskatchewan.

Mr. Belanger: — Okay. My final question is that . . . Just for the record, Tim, I think it would be fair to note that I'm one of those individuals that was required to pay well over $200 a month for insurance on my home if I chose to put in a wood stove. And you combine that with, okay I don't want to do that, then you're just going to jack up the cost of your fuel oil. And then if you use electric heat, well then you can imagine how far that goes. So a lot of northerners do not have house insurance for that specific reason is they can't afford it. And if they do go to alternative energies such as wood heat, then the prices get jacked through the roof. So I think there's some real strong policy arguments.

[10:45]

And the question I have for you today that, given the conservation argument, Peter, given the arguments of net metering, wind power, cogen, solar, and all of these arguments, and a straightforward question, do you feel good, solid investment into those particular opportunities can indeed meet SaskPower's growing demand for energy? Do you feel that those options will fully meet what SaskPower needs in the future?

Mr. Prebble: —Well, the answer is yes, I do. I think, you know, we've barely got going down the renewable energy path in this province, and I think we're underestimating its potential. And other governments have done that, you know.

Probably the government now that's leading in Canada is Ontario, and I think Ontario hugely underestimated how much interest there was going to be in renewable energy in the province. And you know, when it first launched its renewable energy initiative a few years ago, it expected it would take 10 years for take-up on renewables to happen. And what they expected to take 10, took place in one. In one year there was that much interest in sort of moving forward with renewable energy when they really opened the door and said, listen, we're going to start going with feed-in tariffs; we're going to start really promoting this.

And so I think that we'll find the same thing in this province. We're blessed with even more renewable energy for our population size than Ontario is. But I'm certain right now that where all the renewable energy capital is going to be going in this country is to the province of Ontario. Because with their new clean energy Act they are basically signalling that that's what they want is a huge investment in renewable energy, and they're going to get it. And I think we'll see a lot of . . . Just like a lot of Canadian investors have gone to Europe, if they're in the solar and wind field, we're going to see Canadian capital moving to Ontario unless we put something in place that makes it more attractive to invest here.

And I think from the point of view of climate change, Buckley, one of the things that we really need to do is start thinking

about, you know, developing a plan for winding down our coal-fired generating stations over the next 15 to 20 years. And that's going to be a big task. And again we need to look seriously at what the role of renewable energy and conservation is going to be in helping to do that, as well as the potential for hydro imports from Manitoba.

The Chair: — Mr. D'Autremont.

Mr. D'Autremont: — Thank you, Mr. Chairman. I'd like to welcome you here, Mr. Prebble. We've sat on opposite sides of the table for a considerable period of time. You did a report as the Legislative Secretary on renewable energy, but you were involved in the energy issues for many years prior to that.

When you were in government, did your government hold any public hearings that involved energy use and/or production? And based on your expertise and advice, what actions were taken from that? And what public involvement was there in those decisions?

Mr. Prebble: — Well I'm here representing the Environmental Society today, just to be clear on that. But to reflect on my time in government, during the years that I was in government, from 1999 to 2007, while there was certainly hearings on energy topics — for instance, rate hearings held — I don't recall a standing committee of the legislature, for instance, holding hearings on energy policy. I certainly consulted with a lot of people across the province in my role as the Legislative Secretary, but I also didn't hold formal public hearings.

Mr. D'Autremont: — Okay. Thank you very much. One of the issues that you have raised in your presentation is the idea of diversified wind energy projects that would be spread over a very large geographic area, and I've looked for studies or reports that would give some indication as to the viability of those. I've checked with a number of jurisdictions that have a lot of wind, such as Texas, but I haven't been able to find that particular kind of study. Do you have any knowledge of that particular kind of study and what those studies would show?

Mr. Prebble: — Yes, there was work done in the Midwest that looked at a area roughly of about 850 square kilometres — 850 kilometres by 850 kilometres is what I should say — and so a little larger than southern Saskatchewan. And now don't forget that in the Midwest US they wouldn't deal with temperatures that are as cold as ours, so this is not 100 per cent applicable to us. But I think it would be applicable to us certainly at temperatures of, you know, minus 25 or better.

What they found is that say you installed, just as an example, 1000 megawatts of wind, then over that area you could get about 30 per cent baseload. In other words, you could count on them getting at least 300 megawatts that would act in the same way that a coal-fired electrical generating station would act.

Now those stations are down sometimes too, so they're not running at full capacity either of course. But you start to get, you know, you start to be able to count on wind as a better source of baseload than you would if you just located all of your wind facilities at a few centralized locations. I hope that's helpful.

Mr. D'Autremont: — Yes. I'll get the name of that study from you afterwards, if I can. You talked about the need to coordinate wind and hydro. Well we have very few connections outside of the province — I think they said six, SaskPower said — and don't have the capabilities to carry a, you know, a large amount of electricity. Do you have any idea — we would obviously have to increase the transmission lines then — what kind of costs would be associated with that? I know in the past we have held talks with Manitoba Hydro, for which we were chastised because we were talking to somebody other than SaskPower. So what kind of transmission costs would we be looking at if we were to tie into Manitoba Hydro to a significant amount?

Mr. Prebble: — That's a very important question, Dan, and I can't give you a precise answer to that. I think we're best provided by that by Saskatchewan Power Corporation and Manitoba Hydro. Obviously we're looking at hundreds of millions of dollars of investment. It would be a big investment but I think it's a worthwhile investment.

And I really do think we should drop this notion from a climate change point of view now, that we're not going to import hydro in a meaningful way from Manitoba. I mean, Manitoba's obviously importing to a lot of different parts of the US.

In Saskatchewan, obviously we want to try to make sure that the bulk of our power needs are being met through economic development opportunities and jobs that are created here. But given the urgency of the climate issue — which is of great concern to the Environmental Society — and the urgent need to reduce our greenhouse gas emissions and the fact that we're likely to be penalized in Saskatchewan, ultimately, you know in financial terms if we don't, I really do feel like we need to look at this option of importing hydro from Manitoba more seriously.

It can be done in one of two contexts. It can obviously be a direct import all year round, or it can be done as a supplement to wind power that we develop in this province. But in one way or another, I think we need to open that door.

So I'm so glad you asked the question and I'm sorry that I can't give you a precise number on the transmission upgrade. But I think, you know, it's easier for us to upgrade transmission with Manitoba where we already have some natural links than unfortunately it is with Alberta where, just the way the transmission system is designed, we'd have to make major investments if we were to either import or export large amounts of electricity in linkage with Alberta. But I suspect we're looking at an investment that will be in the range of $1 billion then, but I don't know that with precision.

The Chair: — We're down to two minutes. So I have Mr. Wotherspoon with a couple questions, so please take it away.

Mr. Wotherspoon: — Thank you, Mr. Prebble. You've referenced the clean energy Act in Ontario. You've spoken specifically about feed-in tariffs. If you could expand for this committee, if possible, exactly why you value feed-in tariffs, and I guess what other jurisdictions have utilized feed-in tariffs, and what differences might exist as far as the programs that have been put in place and what benefit has been realized by

those jurisdictions.

Mr. Prebble: — Thanks, Trent. The first thing I'd say about feed-in tariffs is that the Environmental Society supports feed-in tariffs because, again, we see this as a way of kind of driving renewable energy forward. Obviously we have to be careful about exactly how much we expend at the end of the day. But given the climate crisis, I would say, that we face in the world, you know, an elevated investment in this I think is justified.

The principle, the basic principle here is that with a full feed-in tariff system, what jurisdictions have done is covered the cost for homeowners or business people to install renewable energy systems. And if they've been installed properly and operate efficiently, the cost for the homeowner or business will be covered over the life of the renewable energy installation. So in other words, people aren't out of pocket at the end of the day by doing this as long as they've installed it efficiently and it works properly.

A large number of jurisdictions in Europe have gone down this route. The French are now moving in this way. The Swiss are moving in this way. Greece has feed-in tariffs. Germany and Denmark of course have feed-in tariffs. Spain and Portugal have feed-in tariffs. I think each jurisdiction has to take account of the plentiful nature, the degree to which a renewable energy resource is plentiful, in establishing feed-in tariffs.

For instance we've got better sunlight and wind resources here than they do in Ontario. Therefore our feed-in tariff doesn't need to be as high as the one that Ontario has set. But Ontario is now guaranteeing, for instance, wind power is coming in now at 13 cents in Ontario. I don't think we need to do that in Saskatchewan. But we might want a feed-in tariff that's in the range of 10 or 11 cents here in Saskatchewan. I mean this has to be worked out of course with some precision, but the basic principle is that when . . .

And you know, the other thing is, the other principle of feed-in tariffs if you take it all the way like the Germans have done, is that when homeowners, co-ops, municipalities, small-business people, farmers, when they produce renewable energy, the state has an obligation to buy it. The state can't say no.

Now we've got a very valuable Crown in Saskatchewan in SaskPower. We may want to take a slightly different approach here where the Crown will partner for instance with a wind farm co-op and do joint investments and obviously work on collocation together. But the basic principle would be that SaskPower would not just arbitrarily say no to proposals for new wind power development which I know, during my time in government, it did. And I understand why it did that but I think the approach on that now needs to change.

If we really want to drive renewable energy forward in the province and we've got communities that want to develop wind power . . . Like Craik was interested in developing wind power, for instance. Why shouldn't the town of Craik and the RM [rural municipality] of Craik combine in conjunction with SaskPower to locate, say, a 1-megawatt wind turbine in the Craik RM? I mean why is that, you know, a bad thing? I think it's a good thing, as long as it can be done in a cost-effective way. And I think we want to be encouraging the larger projects and not just the small ones. You know, we want a mix of both.

So the other thing about that clean energy Act is that Ontario is going to invest $2.3 billion. And I mean obviously we can't invest that much. We're a much smaller jurisdiction. But they're investing $2.3 billion in helping to make sure that they can access renewable, so in other words they're going to build new transmission lines to parts of Ontario where there's excellent renewable energy resources so that they can tap into them. So anyway I hope that's a useful trend.

The Chair: — Well thank you very much for your presentation and your answers. I think everyone found them very valuable, so thank you for taking the time with us today.

Mr. Prebble: — Well thanks. It's a privilege to be able to present, and on behalf of the Environmental Society we're really grateful for that opportunity. Thank you.

The Chair: — The committee will now recess just momentarily. We're running a little close to the start of the next presenter so if we can move quickly we'll recess until then.

[The committee recessed for a period of time.]

The Chair: — I'd like to welcome everyone back. We've got our next presenter here. Before we hear from our next witness, I would like to advise witnesses of our process of presentations.

I'll be asking all witnesses to introduce themselves and to name, if possible, their position within the organization they represent. If you have any written submissions, please advise us that you would like to table your submission. Once this occurs, your submission will be available to the public. Electronic copies of tabled submissions will be available on the committee's website.

The committee is asking each presenter to present in response to this question: how should the government best meet the growing energy needs of the province in a manner that is safe, reliable, and environmentally sustainable, while meeting any current and expected federal environmental standards and regulations, and maintaining a focus on affordability for Saskatchewan residents today and into the future?

Each presentation should be 15 minutes with time set aside afterwards for questions. Once your presentation is complete, the committee members may have questions for you. I will direct the questioning and recognize each member that is to speak. Members are not permitted to engage witnesses in any debate, and witnesses are not permitted to ask questions of committee members.

I would also like to remind witnesses that any written submissions presented to the committee will become public documents and will be posted on the committee's website. And with that I will turn it over to our next presenter.

Presenter: Low Energy Design Ltd.

Mr. Bigland-Pritchard: — Thank you, Tim. I'm just waiting for it to come up on my computer at the moment. But let me say

just to start, my name is Mark Bigland-Pritchard. I'm an energy consultant specializing in low-energy housing, but I have worked on electricity in my capacity as a former lecturer at The Open University and Sheffield university in England. And I've kept in touch with those issues because electricity is such a, you know, hot issue in this province at the moment. My presentation will focus on electricity only, even though the other areas of energy consumption are really important. I kind of hope that that's for another day.

I'm director of a small company called Low Energy Design Ltd. based in Borden. I have a background in . . . well I have two engineering degrees and one in architectural physics. So I'm coming here as a techie but with some policy thoughts. I'm going to be mostly presenting on the techie stuff, but if you want to ask me about the policy in the question time, feel free.

So I put together a PowerPoint simply as a guide that will be submitted, but I'd like to submit a written presentation as well, which will say a bit more.

The context in which we are, climate change is a really serious issue. Saskatchewan is sadly one of the main offenders globally — 72 tonnes of CO_2 equivalent per year per person. And we need to get down to a bit more than one to stabilize climate change and the urgent global need to avoid that 2-degree Celsius threshold, which I'm sure you all know about. But I would like to give this book to the committee because it's the best presentation of the science as I've seen at a popular level for a long time. So that's the urgency. The likely introduction of carbon pricing of some sort — whether it's cap and trade, whether it's carbon tax, whatever it is — on an international basis, as a response to that.

You all know the need to renew the province's electrical infrastructure. We've been basically living on capital for some time, and new infrastructure needs to be put there. It's both an expense and an opportunity. And we should be aware of the depletion of the non-renewables of coal, oil, uranium, gas.

The next little slide doesn't come out very well, but it shows until about two centuries ago we were in the solar age. We purely used solar power in one form or another, whether it's wind or biomass or direct solar. At the moment we're in the middle of that little blip. If you look at it really carefully, you'll see there's a little peak. We're somewhere at the top of that peak. We don't know whether we're on the left-hand side or the right-hand side, but we're somewhere there. And within a century or so, we've got to go back into the solar age anyway — so why don't we do it now? The guy whose slide I'm actually using here describes this blip as the fossil fart.

But if you look on the next slide, you'll see how much energy the sun is sending us every year — 10,000 times more energy than we need. So we actually have the possibility for sustainable power for the world, and particularly for Saskatchewan.

I think it's important to define sustainability, so I presented to you there with the UN [United Nations] definition: ". . . meeting the needs of the present without compromising the ability of future generations to meet their own needs."

And you might want to think about which energy sources actually meet that definition. Most of what we're using at the moment doesn't. But the move toward sustainability is a process rather than a, you know, let's do it all now. And so we need a transition period in which we're using low greenhouse gas technologies. But our ultimate aim is to get to zero or negative greenhouse gas emissions.

Just to show some of the people who are saying that this is entirely realistic, the German Environment ministry you'll see is . . . I don't know how many of these will come out. They're talking about 50 per cent renewables by 2030 for their electricity. They're starting basically from zero 10 years ago or slightly more than zero.

Zerocarbonbritain was a project that was put together by the University of East London. They're saying, yes Britain can get to zero net carbon before 2030 — electricity, heating, transport, the lot — with the correct government incentives. Those correct government incentives won't be there. It'll take a little bit longer. But that was their finding.

A more conservative study by University College London — I've given you the URL [universal resource locator] for there — says, you know, it's perfectly viable to do 95 per cent renewables, and probably 100 per cent. And you heard last week from Tim Weis about these two studies in Ontario and Alberta which the Pembina Institute have done. So this is an entirely viable option to go to sustainable power.

The guy who's responsible for regulating electricity in the United States, the guy who makes sure that the electricity stays on, Jon Wellinghoff, saying "no new nuclear or coal plants may ever be needed in the United States." And, "renewables like wind, solar and biomass will provide enough energy to meet baseload capacity and future energy demands." When you read some of the things that have been said in this debate, that looks dramatic. But you know, I really don't think it is.

So let's look at what the options are. I've split them into a number of different categories. I'll start with the mature sustainable options, the options where the technologies there, where the cost has basically come down to, you know, comparable with fossil energy or less. And in the first case, demand-side management and efficiency or conservation, it's considerably less. This is something we should be investing more in. Wind power, some of the biomass options and obviously hydro.

The next slide . . . I don't know if the graph has come out on the next. It's slide number 15. It's there? Okay. Don't look at the top line; that's Washington State which I don't know anything about. But this shows the electricity consumption per capita from 1960 to 2005 in the United States. That's the middle one. You see it's steadily increasing. And in California, where you see from the mid-'70s, basically it's stayed level. And that's despite considerable economic growth — indeed, the emergence of an important new global industrial sector in the semiconductors industry and computing. California have managed to do it. No reason why we can't.

[11:15]

Let's move on to wind. You have a map there which is kind of blurred. This is from the Canadian wind atlas, which is kind of difficult to read. But just take it from me; this is the bit of the map that covers southern Saskatchewan. And anything which is blue is inappropriate — probably — for large-scale wind power. I'm saying large-scale because this is wind speeds at 80 metres.

As you see, there's not very much blue on there. And indeed, some places in Europe, they would be looking at some of those blue areas as well. But anything that's green or more is six metres per second or more. And that seems . . . It's internationally taken as a reasonable sort of threshold for suitability of wind resource.

So on the next slide you see, you know, we only actually need 300 square kilometres to supply, I've arbitrarily said 20 per cent of our power from wind in 2030 according to SaskPower projections. And we've got 100,000 square kilometres available. So this is not a difficult one in terms of land area.

Biomass, the picture there — I don't if the picture's come out — but it's actually from Manitoba of a load of straw bales going into a shed where they get burned, and actually in that case for heat.

But the technology exists for combined heat and power, and if the next one would come out, you would see an installation in Slough in England where they're actually doing that. This is a mature technology. It needs to be tweaked for our climate but it's a mature technology. Present biomass potential looks to be 20 to 40 per cent of 2030 demand after we've done all the things that we need to do with agriculture to keep agriculture at least as sustainable as it is now.

Hydro, there are sites that we could use, mostly run-of-river which means basically that we could keep pace with — in terms of proportion — with demand.

Okay. Let's move on to the transitional technologies. I'll go through these pretty quickly. Natural gas combined cycle gas turbines, higher efficiency than the gas turbines that we've got now because you can get so much higher temperatures and you can recover most of it, so you can get to 55 per cent efficiency instead of maybe 30 per cent. Combined heat and power, cogeneration, where you're using the waste heat from your power station to actually provide heat. It doesn't save a lot of electricity but it does save heat. Generation from industrial heat recovery, and we've already got some of that, and we could use a lot more in the province. And coal with carbon capture and storage I see as a transitional technology which has interesting future possibilities. But if you look at the next slide, the calculations that I've done in terms of greenhouse gas emissions and in terms of the overcost suggests that it's not really appropriate for large-scale rollout in the province at the moment.

Next category, photovoltaics. It's a mature technology but it's still a developing technology. And the nice thing about photovoltaics is that the prices are still dropping, and they will continue to drop. I don't know if you've got slide 25. You have. That actually comes from a document that Lazard put out last year with predictions of the price of different energy options, in this case photovoltaics. There's two lines there that's for two different types of technology with thin film, the crystalline, and you see by 2018, we're down to 5.8 to 6.6 cents per kilowatt hour, comparable with, you know, anything on the grid at the moment.

And if you look on the next slide, which you've also got as a separate paper, you see that Saskatchewan's solar resource is exceptional, actually. It's the best in Canada and it compares very well with some of the places in the world where photovoltaics are being pursued actively.

The next few pictures probably didn't come out too well and I'll skip those. They just show your roof and wall and motorway and field installations of photovoltaics, all of which we would need — or all of which it would make sense to use — and in doing so, we would use up 20 square kilometres of our land space to meet 10 per cent of our projected electricity demand. So not very much.

I think there are areas of research that need to be done, particularly in a couple of areas of biomass issues. One is torrefaction. This is a process by which basically you turn wood or straw or whatever it is into a material that's a lot more like coal — a lot denser, higher carbon content. You get gases out at the same time, which you can use. But the advantage of this is twofold. One, it's easier to transport; it's less bulky. And the other is that it could be used in existing coal-fired power stations with very little modification the researchers expect. But research needs to be done on that, and I think that should be an urgent priority so that those coal-fired power stations down in the south of the province could be converted to biomass relatively quickly.

The second technology is called biochar. In a sense it's a similar technology. You use a pyrolysis approach so that, you know, you're heating in sparse oxygen at a particular temperature. You get out a gaseous stream. You get out a liquid stream, and you get out charcoal. If that charcoal is the right consistency, it could be put back into the ground, so it is a means of carbon sequestration. It also enables your soil fertility. The carbon/nitrogen ratio has to be kept at a certain level. If it doesn't, then you get nitrogen given off. So that's a third benefit, is you reduce the amount of nitrous oxide given off from agriculture. Nitrous oxide is a major greenhouse gas.

So this is a technology which, if it can be made to work in this province — and that depends on soil types, and it depends on a number of other factors — could really revolutionize our biomass potential. And you'll see that on the next slide. That's just a rough estimate, you know. It's not possible to do accurate figures at the moment, but basically we could run the whole province on biomass if we go the biochar route, assuming that my calculations are viable.

So I've put there three other renewable possibilities. One is deep geothermal. We don't know whether we've got the resource for that in the province at the moment. They seem to have it in Alberta. We don't know whether we do. Concentrating solar, that's generally associated with more southern climates, but a concentrating solar plant has just opened at Jülich in the Rhine Valley in Germany, whose solar resource is considerably worse than ours. So you know, it might

have a possibility.

I'd just like to talk about grid integration for a little bit because what we're talking about here is actually revolutionizing the way that the grid works. They've already started to do this in Denmark, northern Germany, and a number of other European countries. But it really does mean we have to move away from the old ways of thinking about how grids work with baseload and peaking and intermediate, which, sadly, I see SaskPower still, you know, don't seem to be entertaining this change.

Jon Wellinghoff again says, "I think baseload capacity is going to become an anachronism." Rather than having, you know, that constant output from inflexible sources like coal and nuclear, you could have . . . and then top up the rest. You can take it from wind or solar or whatever, and then you've got a different variability to top up, but the additional variability is not as great as is necessarily assumed. To see how that actually works in practice, go to this website — this is slide 39 — www.energynet.dk. It's the website of the grid operators in Denmark. It's quite a nice illustration of how they operate.

So how would we do it in Saskatchewan? Firstly, wide geographical distribution. When the wind's blowing in Biggar, it isn't necessarily blowing in Esterhazy and vice versa. And that report that somebody asked Peter about, it was by Mark Jacobson of Stanford University and covered a fair area of the southwest of the US.

Again, pair wind with hydro. Hydro is particularly good for this because you can, when the wind's blowing well, you can leave the water in the reservoir at the top of the dam and then when the wind's not blowing, you've got that much more power there that can come down. So you're actually using both. It's not a matter of using the hydro to fill in the gaps with the wind. You're also in effect using the wind to fill in the gaps with the hydro. And that's kind of important when we think about sharing with Manitoba which . . .

I don't know if these have come through. These were nice little pictures that my daughter did. But it's kind of important that future generations are thinking about these things.

If we were to come to an arrangement with Manitoba, I think it's important to understand we would be wanting to aim to send them as much wind power as they send us hydro. So it's not a matter of them, you know, not being able to sell the stuff to the States. And this is actually how it works with Denmark and Norway and Sweden in the Nord Pool. The Danes tend to export more wind in winter and import more hydro in summer, but it works out about the same. Then the next thing to do, when photovoltaics become more economically viable, wind and sun can work together in a similar way to some extent. So that improves the stability as well.

The next option is demand-side management. Basically we're talking here, load management. We're talking smart grids. So if you can actually shift a demand from the time when there's not much wind to the time when there is more wind, then you've got better availability. The technologies that are being used in Vermont at the moment can do that. They're also doing it . . . they're experimenting with it in Denmark. It's not new . . . it is new technology, but it's not unknown technology.

Then there's a number of options. Once we get to a certain level of variable power, we end up having to use storage. That's probably maybe 20, maybe 30 per cent. It's difficult to tell at this stage without running some really very detailed calculations.

Of the storage options that I've presented here, really the first three are the ones that are serious for grid scale electricity. Number four will become a reality when we're all using plug-in hybrids with advanced rechargeable batteries.

I'll skip a little bit to slide 48. I've compared the greenhouse gas emissions. These are from the best sources that I've been able to access. On slide 48, you see greenhouse gas emissions for the old technologies — I mean, okay, CCS [carbon capture and storage] isn't an old technology — but for the fossil and nuclear technologies. These are, you know, as I say, they're the best academic figures I've been able to find. They're not biased towards the industry.

Likewise on the following slide, you see much lower emissions — life cycle analysis emissions — for the renewables. I should have added in there demand-side management and energy conservation greenhouse gas emissions — zero grams per kilowatt hour.

And of course there are other benefits: more jobs per dollar invested, more jobs per kilowatt hour out from all the renewables and especially from demand-side management and conservation. The jobs are more local. So local communities which are struggling have a chance of, you know, maintaining their existence, staying together, keeps families together with less people commuting up to the North for work, more opportunity for local community enterprise — whether that's co-ops or whether it's local businesses or however we do it; I would want to do it largely from co-ops — and lower toxic emissions.

Okay. So that's the end of my presentation. In terms of policy, I want to be fairly simple and straightforward, which is difficult because this is complex policy area. But I want to be as simple as possible.

[11:30]

The first thing that we need to do is actually make it possible to viably export renewable electricity into the grid, to take away the veto that SaskPower has on it, to enable local communities to export. And the current scheme, the current net-metering scheme allows individual householders to export to the grid, but at that scale, the technology is not really financially viable. At larger scales it is. So we need policies that will enable a community to have a wind farm or a biomass plant or whatever so that it can export to the grid. We then would need the grid to be restructured so that it's a network, a decentralized network.

SaskPower have an important role to play in this. We need SaskPower. We need them to guide us through this transition. But a transition will be necessary. And feed-in tariffs, such as they've introduced in Ontario, are a vital part of that, in making this a rapid and as cost-effective as possible a transition. So that's all I have to say.

The Chair: — Thank you very much for your presentation. I got wrapped up in it a little bit, and I didn't give you your three-minute signal when I should have, so we went a little over. But I sure appreciated it. I think it was very good.

Mr. Bigland-Pritchard: — I'm sorry.

The Chair: — No. No. I'm blaming myself for that one. Before I go to questions from my colleagues, just a quick one. It looks like your experience is a lot on the ground actually in Saskatchewan today. What is the difference, do you know or have you experienced, between winter and summer with photovoltaics installed in your house? Are you noticing substantially better in electricity generation in summer than winter, or is the clearness in winter . . .

Mr. Bigland-Pritchard: — Well I don't have photovoltaics in my house yet. I mean, clearly the resource changes, and for a rooftop installation it changes quite dramatically because of the angle. But yes, we get less sun in winter than we do in summer. But we do have very good solar resource in winter. It's only less because the days are shorter. So actually I would go by preference for 70-degree angle in fields and on walls rather than roofs where we're doing this in the towns. Does that answer your question?

The Chair: — Somewhat. Is there a base rule of thumb that between winter and summer it's 80 per cent to 100 per cent, or am I asking for something that's too variable depending on where you are?

Mr. Bigland-Pritchard: — It's too variable really. I mean it depends where you are. It depends on the angle of the panels quite crucially. I've been involved in consulting actually on the hot water, and I found myself having to recommend 90-degree panels simply so that they get enough in the winter. Obviously the demand is higher there for the winter. It's not to the same extent for electricity. But there is a variability there. But you know, the figure's that I'm assuming is sort of 10 per cent penetration as really where we get to. That's not going to be a big issue because other things will be able to make up for that, especially wind. But also, you know, biomass can be ramped up and down. Hydro can be ramped up and down.

The Chair: — Yes. Mr. Wotherspoon.

Mr. Wotherspoon: — Thank you for the presentation here today. It's appreciated. Well I guess just first off, we weren't able to receive all of the information on the slides, so I would appreciate if you're able to table this in entirety first.

Mr. Bigland-Pritchard: — I'll make sure of that and also a written presentation that will say more of the stuff that's not on the slides.

Mr. Wotherspoon: — Thank you. You mentioned a little bit about biochar. This is something I don't know a whole bunch about. You talked about having the capacity to potentially use the current coal-fired generation plants and basically in short order be able to produce power based from biochar. I'm just wondering as far as actual economies of scale here if we're talking about similar type of megawatts being produced from these units that they are right now with coal.

Mr. Bigland-Pritchard: — Actually I mean there's two different technologies there that I was talking about, but they are very similar to each other in that they both involve pyrolysis of the biomass. They just operate at slightly different temperatures and slightly different oxygen levels. So torrefaction is the one that potentially gives us the opportunity to feed the coal-fired power stations.

I mean obviously there's some logistical work to be done on that, to think about how do we actually get that volume of torrefied wood or torrefied straw down to Estevan and Coronach to feed the power stations. And I mean that is a significant, you know, it's a challenge, but it's a logistical challenge that we ought to be able to meet. There's loads of the stuff around.

There are other, you know . . . Research needs to be done on how do the burners need to be adapted and also on the torrefaction process itself. I think I've lost track of your question.

Mr. Wotherspoon: — No. Just basically the capacity, I think, of particularly supply. So you're talking about — and I don't know this process well, this torrefaction — but you're speaking of wood and straw then going through a process that then enables it to be able to be turned into power at the . . .

Mr. Bigland-Pritchard: — Yes. I mean not all of the coal-fired power stations would be able to be converted that way with the biomass resource that we know about at the moment. But if biochar technology proves to be viable, so that we can actually burn some stuff in the ground, that increases the resource, but again it doesn't enable us to use those power stations. It enables us to use probably local gasification-based power stations.

So the answer to your question is probably some of those coal-fired power stations would have to close in the process of going this route, but not all of them.

Mr. Wotherspoon: — Who's doing this work as it relates to technology development for biochar? Who should we look to or seek?

Mr. Bigland-Pritchard: — This is the first sort of serious book on the subject produced internationally. So I mean I can let you have a look through to see some of the names here. It's an area that I'm just sort of trying to learn about myself. But I have had an email this morning, in fact, from a guy at the U of S [University of Saskatchewan] who is seriously interested in looking into it. And I could find his name for you.

Mr. Wotherspoon: — That would be appreciated.

Mr. Taylor: — For those who aren't in the room and are listening to this, and for the record, could you read the name of the book and the author and the year of publication?

Mr. Bigland-Pritchard: — Yes. The book is called *Biochar for Environmental Management: Science and Technology*. It's published by Earthscan. It's edited by Johannes Lehmann and Stephen Joseph. And the date is 2009. Do you want the ISBN [international standard book number] as well?

Mr. Taylor: — Thank you.

Mr. Wotherspoon: — The members opposite have routinely made comment that here in Saskatchewan, because of our strong and growing economy that we, I guess, in turn have growing power needs. I heard something around you suggesting — as it related to California specifically — a strong, growing economy didn't preclude them from investing in conservation or in efficiency or in fact either mitigating, controlling, or reducing some of their power consumption. Can you make that comment? Because it seems to be a bit of bone of contention or possible confusion at this table that to have a thriving economy — which is something we all are committed to — precludes meaningful work in conservation and efficiency.

Mr. Bigland-Pritchard: — Okay. I kind of hope that, you know, this really doesn't need to be a party argument, is my first thought. But there are, I think, two or three issues here. I mean one is that the line of development which Saskatchewan has gone down is a particularly energy-intensive one. The mining of primary resources is particularly energy intensive, in the way that manufacturing industry isn't quite so much. And that means that we may not be able to achieve what California has achieved.

But we could do a lot better than we have been doing, and we could do a lot better than the SaskPower presentation last week suggested that we could do. They are talking about reducing capacity or effective capacity by 100 megawatts in 10 years. That's a conservation saving of 0.3 per cent per year. The general view in the demand-side management community throughout North America is that 1 per cent per year is easily achievable. And places like California and Vermont do a lot better than that.

So you know, that side of SaskPower's operation, I think, needs to be focused on a great deal more. And if that needs legislation, you know, to say in SaskPower's founding documents that one of its primary purposes — along with producing electricity, adding an economical basis and secure supply for the people of Saskatchewan — alongside that to say that to do it in an environmentally responsible manner and to maximize energy conservation and efficiency is also one of their core purposes, I will be in favour of that if that's what it takes to get them to do this. They certainly need to have more than . . . I think there's only three people there working on demand-side management at the moment. When you compare that to somewhere like Vermont or even Manitoba, that's really not enough.

However there is another reason why I think that electricity demand is going to rise, and that is that within 10 years we're going to start to see transport significantly shifting from fossil fuels to electricity. And so we have to be prepared for some increase, but probably not the increases that they're talking about.

Mr. Wotherspoon: — Thank you. And I guess just as a last comment I would urge you to formally submit to this committee as follow-up any individuals, experts, organizations, or even industry or utilities that you think we should be inviting or engaging through this process. We recess for a month or two as a committee and then reconvene back in January, and it's an important opportunity for this committee. So I would invite you to table, not necessarily here today, or to write back to us to make sure we reconcile our list to make sure we have all those engaged that we should. And thank you too.

Mr. Bigland-Pritchard: — And can they be anywhere in the world?

Mr. Wotherspoon: — I would urge you to, yes.

Mr. Bigland-Pritchard: — Yes. Okay.

Mr. Wotherspoon: — Thank you.

The Chair: — Mr. Weekes.

Mr. Weekes: — Thank you, Mr. Chair. Good to have you here, Mark. It's nice to have a constituent make a presentation. I suppose we could spend all afternoon just with your presentation; there's so much information. Just one general comment: you know, a big part of this whole discussion is the cost of future production, electrical production, naturally. But just specifically, one item that is brought up is the cost or the price of carbon. Do you have any thoughts . . . We have seen a wide range of what it could be or should be. Do you have any thoughts on what the potential cost or price of carbon could be or should be in the future?

Mr. Bigland-Pritchard: — I think that one is in the hands of the international politicians, and it's very difficult to know what is going to happen in that regard. I think Tim Weis, who presented on Thursday, has a much better handle on this than I do, and so I would refer you to his figures. I just note that the carbon capture and storage overcost is actually rather larger than any of the carbon pricing figures that I've seen. That overcost is partly research, it's partly . . . You know, there's a lot of government subsidy that has gone into that.

But I think that that ought to be out there on the table before the province goes too far down the carbon capture and storage route. There may be other reasons for doing it, but that's something I would say.

Mr. Weekes: — Thank you.

The Chair: — Mr. Belanger.

Mr. Belanger: — Yes. We've asked a number of people the question I want to ask you again in relation to the sustainable power concept on your presentation for Saskatchewan. I notice when you talk about wind . . . There seems to be quite a bit of wind in the Sask Party ridings.

But just in terms of the mapping itself, this whole notion of ice and freezing temperatures on some of the wind power possibilities, what's your take on that particular perspective? Because quite a few people had their position stated in terms of, how valuable and how proven is the technology in wintertime when it comes to comes to wind generation?

[11:45]

Mr. Bigland-Pritchard: — Yes. The next presenter I think is

an expert on this, so ask him the same question. As I understand it, you know, conventional off-the-shelf, so to speak, wind turbines are good down to minus 30. Now we don't actually get many days in Saskatchewan, if you actually look at the weather data, we don't actually get that many days that are below minus 30. We do get a few, but not as many as I think some of us would like to think. We, you know, like to think we're really tough because we can cope with this climate.

It is possible at a slight overcost — I think between point five and one cent per kilowatt hour is the figure that I've seen — to get wind turbines which are good down to minus 40. And that has to do with different lubricants. It has to do with the different surface to the steel, a different steel because it's . . . you know, to make it less brittle at low temperatures.

To me this isn't a problem. There are two utility scale wind turbines in the Yukon. There are a couple of dozen wind turbines in Antarctica — mostly small ones — for research basis, but one utility scale and three more being built. If they can solve it, we can solve it.

Mr. Belanger: — The second question I have is that we notice with the geothermal discussion and now with your wind mapping, so to speak, that really there's a lot of the action happening in the southernmost part of the province of Saskatchewan. Especially with geothermal, I think there's only about three or four locations where it could be of any value to the people of Saskatchewan.

So in terms of the central region, like the Saskatoon areas; the northern region, we've got the Precambrian Shield; is there any kind of specific energy option that you'd like to see, as opposed to conservation, that could be part of the Saskatchewan solution? Because we see two options that are primarily based in southern Saskatchewan — nothing in the central, nothing in the North.

Mr. Bigland-Pritchard: — Okay. I mean if you look at that wind map, I know it's difficult to read, but you'll see that it's really a line from Lloydminster through to P.A. [Prince Albert] to wherever it is, the other end of the province, that determines where wind is suitable. The river valley is not good, so Saskatoon's not good. But you don't have to go very far out to be out of the river valley.

So wind is suitable for what you've described as the central part of the province, not particularly for the North. But the reason why the wind resource isn't so good in the North is the trees. If you have, you know, a reasonably large open area of water like Wollaston Lake, for example, the wind resource goes up again.

So that's the situation as regards wind. But really the technologies for the North are biomass and hydro. And I caught the end of Peter Prebble's presentation, and what he was saying about the appropriateness of first the conservation, as you say, but then of community scale biomass facilities that would be both district heating and electricity, seems to me to be something where we could actually be pioneers. You know, the technology's there, but we could be pioneers at doing it in that sort of climate, which is going to require a certain amount of adjustment.

And, you know, where there's a good hydro resource, obviously that's a matter for negotiation with local bands, local villages, whoever. But it's viable.

Mr. Belanger: — Just to clarify one item, sir. Just to clarify. So are you saying, based on the wind mapping that you have in your experience, that the value and options of wind generation power in northern Saskatchewan would be classified as limited or severely limited or non-existent at all?

Mr. Bigland-Pritchard: — It's limited really to those areas where there's open space, which means open water. You know, north of P.A. there's maybe three or four places where it's viable.

Mr. Belanger: — Okay. Thank you.

The Chair: — Mr. Bradshaw.

Mr. Bradshaw: — Thank you, Mark, for your presentation. You know, we've been talking about wind quite a bit and of course, as I saw in your presentation, it wouldn't take all that much agricultural land. Out of curiosity's sake, have you ever seen, or what would be the reason for not actually putting the wind turbines actually right into the cities where you already have quite a few tall buildings and quite a bit of area? Plus, you know, cities are large users of power. The power is right there. The lines are all integrated within the city.

Mr. Bigland-Pritchard: — Yes. Well actually I mean as you can hear from my accent, I'm not from here originally. My home city of Bristol has recently, its port authority has installed a couple of wind turbines. You know, this is the port from which Cabot came to discover Canada. It's now wind powered. It's moved downstream a bit but it's now wind powered. And I have seen urban wind turbines in a few places in Britain, a few places in Denmark, and there's one in Toronto, actually, on the waterfront, community owned.

There have been issues around that to do with noise, to do with television reception being interfered with, and more recently there's been a bit of a scare about some health issues which probably need to be looked into. But the research, the work that's been done on it is certainly not enough to say that there is a problem. So I would be, you know, cautiously optimistic about installing it in some cities in the, you know, in the industrial areas rather than the residential areas.

Unfortunately Saskatoon doesn't have a particularly good wind speed. And Regina? Parts of it, maybe. P.A. should be okay, parts of it. Moose Jaw should be okay. But that does mean it mostly it has to be in the rural areas. That's not a problem to me because, you know, rural regeneration is needed.

Mr. Bradshaw: — Okay. Thank you. That was my only question.

The Chair: — Mr. D'Autremont.

Mr. D'Autremont: — Thank you, Mr. Chairman. I'd like to welcome you, Mark, to our hearings. I note Mr. Belanger's comment about the wind in Sask Party constituencies, and I'm pleased to say that the people of Saskatchewan chose to create

that in 38 constituencies out of 58.

The hydro that you are discussing or bringing forward —the last time there was dams built in Saskatchewan it took 18 years for completion because of the opposition to those dams. Do you believe that the public of Saskatchewan is now more accepting of hydro dams than they have been in the past?

And I'm interested in Trent's comments about the biomass, the biochar or the torrefaction possibilities. You're still burning that product. What of the CO_2 emissions related to it, both in its creation, its transportation, and then a subsequent firing in a power station? Is CO_2 a problem or is it something that would still need to be collected in a recovery method at a power station or during the process of production?

Mr. Bigland-Pritchard: — Okay. To talk about hydro first, the bulk of the hydro sites which are left and suitable would be run-of-river sites which, you know, it does involve a small dam but you're not changing the landscape in the same way as you would with a reservoir-type hydro installation. So I would expect greater public acceptance of that, especially if it was done in collaboration with the local community rather than imposed on them.

And I don't know what the history is here because I wasn't here, but obviously northern communities have, you know, a reason to want investment in their communities and this, if done in an environmentally sensitive way, this is a possibility. In the end it's up to them, as far as I'm concerned.

As far as biomass is concerned, I should have said biomass only makes sense if it's sustainably grown. So if you're growing, you know, purpose plantations, you need to ensure you replant to replace everything that's taken out and that way the carbon dioxide that you're using when you burn is actually absorbed by the new trees or whatever it is. So that's the one point.

But the other is that most of the resource in Saskatchewan is actually from forest residue and agricultural residue — stuff that isn't used. In fact some of this is actually burned in incinerators in the North without actually recovering any energy from it. There's a massive incinerator just south of Meadow Lake where they just . . . [inaudible] . . . the stuff that they don't want to make dimensional timber out of, and they burn it. That seems to me to be a slightly stupid thing to do. So you know, by recovering energy from it, you're actually getting a benefit.

But this does actually raise another issue which I should have mentioned. If we can get the torrefaction process operating, you know, if we can burn the stuff on a large scale in Estevan or Coronach or wherever, then there is the possibility for carbon capture and storage from that, which means that we can actually be carbon negative. We may need to do that. We're way behind where we should be in terms of meeting greenhouse gas targets — not just us, but, you know, the whole world. We probably will need to have carbon negative technologies and that is a possibility.

As far as the greenhouse gas emissions are concerned from biomass, you know, without doing that . . . You can see it on my slide number 48. These are figures put together in Europe by a team from Coventry University in England. So 20 grams to 59 grams per kilowatt hour, that's the whole life cycle figure. So it's considerably lower than for any of the fossil fuel options and lower than nuclear.

Mr. D'Autremont: — So we would still need though then to be capturing CO_2, so that technology still needs to be obviously researched and enhanced to proceed either with biochar or coal or whatever. After all coal is biomass from 1 million-plus years ago.

Mr. Bigland-Pritchard: — I'm in favour of, you know, continuing to research that technology because I think we're going to need it. But I just don't see it as a first line approach.

Mr. D'Autremont: — And with . . . [inaudible interjection] . . . Yes, very short. The run of the river in the North or some other, we would also need then new transmission as well, would we not?

Mr. Bigland-Pritchard: — Yes. Whatever we do, we're going to need new transmission. Whatever we do.

The Chair: — . . . Mr. Belanger for one question. We are running overtime, but we'd started a little late with you and I wasn't on the stopwatch as I should. So if the committee will indulge Mr. Belanger. Mr. Belanger?

Mr. Belanger: — Just a small point of clarification. When he mentioned the port in which Cabot left to discover America, I remember an old, old, old story that he actually was invited here by the First Nations. I remember somebody telling us that story, so just to clarify.

Mr. Bigland-Pritchard: — Well we'll talk about that later.

The Chair: — I had just one question from something that triggered as you were answering another question. And if you can make it brief, that would be great. You said, if or when our society starts moving to an electric plug-in vehicle, the needs of Saskatchewan electricity — when we start replacing gasoline with electricity — may go up. You know, when you're looking at the big picture, is there any concept how much more electricity if 10 years from now we're using a substantial amount of electric vehicles? Is there any number you can throw out there?

[12:00]

Mr. Bigland-Pritchard: — Just sort of doing this off the top of my head, we'd be looking at much more efficient vehicles than we're using at the moment. So my guess is that we're talking about somewhere between a 30 and 50 per cent increase, ultimately.

The Chair: — Of electricity generation.

Mr. Bigland-Pritchard: — Yes. Of course as vehicle technology improves, that could come down.

The Chair: — And I'm not going to hold you to that. We're a long way off. But if we would indulge Ms. Morin with a quick question.

Ms. Morin: — Thank you, Mr. Chair. I'm wondering, just on the policy side, we've heard about the clean energy Act in Ontario and what that's doing in terms of policy initiatives with the First Nations people. And we haven't had much elaboration on that. I'm wondering, Mark, if you'd be able to shed some more light on some of the policy initiatives that the clean energy Act in Ontario is going to further enhance in terms of First Nations involvement in producing energy as well.

Mr. Bigland-Pritchard: — Yes. Okay. I haven't actually read the clean energy Act yet, but the summary that I have read of it, the way that it works is that there is a guaranteed price for each of a number of different renewables options and that the power authority has to buy at that price. It has to buy from you. For community wind power or solar power or whatever, and for First Nations projects, there is actually a bonus put on that price and that's for a couple of reasons. Partly because, you know, if you don't have the corporate infrastructure, it costs you more to do these things. But it's also partly to encourage those groups to use their land and, you know, to enable them to get the economic development too that's possible through renewable power schemes.

Personally, I would want to go a little bit further than that in Saskatchewan, but we're running out of time.

Ms. Morin: — I wouldn't mind hearing what you have to say on your personal level with respect to that policy. Because I think that's an important initiative for us to be looking at — in this province especially — especially since we're hearing of some of the concerns that the North have through Buckley's own experiences.

And knowing full well that this is a real opportunity in terms of the green economy to generate employment opportunities and such, that this would be something, you know, that the First Nations community, Métis communities of the North may want to embrace. So I would actually be interested in hearing some of your own personal comments on that.

Mr. Bigland-Pritchard: — Well I would like to see the province pay for consultancy costs for First Nations for these types of projects. I mean a lot of the land that is suitable, especially for wind power, is First Nations land or, you know, historic First Nations land in the North, but also reserves in the southern part of the province. So I would certainly like to see them helped through that, sort of, minefield of the technical consultancy, the legal aspects, the financial aspects so that it's a level playing field basically.

But secondly I would like to see priority given to schemes which are under community ownership rather than schemes which are, you know, brought in by a flash company from Ontario. And by community ownership, I mean First Nations. But I also mean, you know, if my village were to decide we're going to have a power station, that should be given, you know, priority of access to SaskPower resources over if, you know, a multinational were to come in and say, you know, we want to do it in the next village.

The Chair: — Well thank you very much for your presentation today. And you were very generous with the questions you took following.

We will recess just momentarily to allow our next presenter to get in. And we will try and hold ourselves to our time limits from this point forward. So thank you very much.

[The committee recessed for a period of time.]

The Chair: — Well I'd like to welcome everyone back. Before we begin with our next witness, I would like to advise the witness of the process of presentations. I'll be asking witnesses to introduce themselves, and please state your name and if applicable the position you hold with the organization that you represent. If you have a written submission, please advise us that you would like to table your submission. Once this occurs, your submission will be available to the public. Electronic copies of tabled submissions will be available on the committee's website.

The committee has asked all presenters to present in answer to this question: how should the government best meet the growing energy needs of the province in a manner that is safe, reliable, and environmentally sustainable while meeting any current and expected federal environmental standards and regulations and maintaining a focus on affordability for Saskatchewan residents today and into the future?

Each presentation should be limited to 15 minutes with questions to follow. I will direct questioning and recognize each member that is to speak. Members are not permitted to engage witnesses in any debate, and witnesses are not permitted to ask questions of committee members. I would like to remind witnesses that any written submission presented to the committee will become a public document and will be posted to the committee's website for public viewing.

And with that, I would like this afternoon's presenter to take it away. Thank you.

Presenter: Canada Wind Energy Association

Mr. Huggill: — Thank you very much, Mr. Chairman. And good afternoon everyone. My name is David Huggill, and I am the Western Canada policy manager for the Canadian Wind Energy Association. And I certainly respect the fact that you've stretched out your morning to accommodate me, so I'll try to be succinct so that we can get to lunch. The acronym for my group, for my association, is CanWEA [Canadian Wind Energy Association], and I'll refer to that for the remainder of my presentation. I have provided a written copy of the oral presentation that I'm going to share with you this morning. As well there's two background documents that you will have received, and I'll refer to those later on in my presentation.

Specifically to the question that you're attempting to answer here this morning, CanWEA believes that you should seriously consider increasing the amount of wind generation that you currently have on the Saskatchewan grid. I'll focus on a number of the benefits that will come from increased penetration levels of wind in Saskatchewan and certainly welcome your questions on that.

Very quickly about CanWEA, we are the not-for-profit trade association that advocates on behalf of wind across the country. I think it's important to recognize we are not advocating that all

power should come from wind. Rather we see an opportunity for increased levels of wind penetration across the country, and we certainly are advocating that on a responsible and sustainable manner. We are, as I like to say, the wind industry warts and all. And I think that's an important premise.

We have over 400 members that currently represent everything from turbine and manufacturing components of the industry itself. The supply chain represents a significant way forward for our association. We have all levels of governments, utilities, system operators, and all various aspects of the wind industry as part of our membership.

[12:15]

Last year in the fall of 2008 at our annual conference, we released the document that you have before you, the wind vision document, which basically identified a strategic target for Canada. What we found in other jurisdictions — you've heard some of the other presentations allude to the experience that's taking place in Europe and in the United States — what we found is in those jurisdictions that have significant levels of wind penetration in their systems, they've looked at wind as a strategic resource. And we think the opportunity is right for Canada to do that.

We've identified a target of 20 per cent of Canada's on aggregate generation mix coming from wind power, and that would translate into the figures such as over $80 billion of investment in the various communities across the country; 52,000 long-term, stable, high-paying jobs essentially located in rural communities; would mean an addition of 55 000 megawatts of clean, renewable energy at a time when all governments, and certainly the public at large, is looking for reliable, clean energy sources. It would also result in over 17 megatonnes of greenhouse gases being cut from the emission of Canada.

I'll spend a little time talking about a variety of benefits that will come from that, and I've captured that in some overall headings. But I want to qualify my comments in that this is in no way meant to be an exhaustive list; the level of benefits continues to sort of expand as the industry does. And I just want to touch on a few highlights that we think are important for this committee and the government generally as Saskatchewan moves forward.

When it comes to pricing in terms of both wind power — the cost of bringing that on stream, as well as what that does to electricity prices — I think it's important to remember a few fundamentals. As this committee has heard and the government has identified along with SaskPower, the demand for electricity continues to rise. There's an acknowledgment that the cost of bringing on new generation and transmission and various other infrastructure is also going to rise, and there's also a requirement to address aging infrastructure. The generation fleet is very quickly starting to deteriorate and we know that, on aggregate across the country within the next 15 to 20 years, there's going to have to be a significant investment in that infrastructure.

The other issue that needs to be brought forward is the carbon market. There is, I think, acknowledgment that the carbon market is coming. There continues to be a number of conversations and debates about what that will actually look like. Nonetheless I think it's fair to say that the price of using fossil fuels will continue to rise, particularly because of the influence of that carbon market, whatever that may look like.

And finally when it comes to pricing, it's important to remember that the price of wind is known; it's predictable, and it's zero — which I think are very tangible benefits. One of the issues that is often brought forward with respect to wind is the reliability issue: when the wind blows, there's power; when it doesn't blow, there isn't power.

What we've seen is that, particularly in the examples of jurisdictions where there have been ever increasing levels of wind power, as you increase the amount of wind installed as well as the geographic diversity, you see a levelling of the variability — both the diurnal and yearly fluctuations tend to smooth. We've seen that. And that's not based on speculation, that's based on actual data from a variety of other jurisdictions that have significantly more wind than Canada and Saskatchewan.

It continues to be an important role. And as Mr. Prebble suggested earlier this morning, one of the issues that we've seen repeatedly is that utilities and system operators will identify what they think as a target in terms of how much wind could be integrated under their system. And once you start to get into some of the details, it becomes evident that more wind is generally, I think it's fair to say more wind is always able to be integrated than was initially thought.

There's been a number of integration studies across the country, and they've all sort of substantiated that geographic diversity and increased nameplate capacity is important features of increasing wind penetration levels. We believe that to be true in Saskatchewan as well.

The other issue with respect to reliability is the sort of the companion piece to generation, and that's transmission. You've heard some comments about the importance of transmission. There is recognition within Saskatchewan that there is going to have to be some investment in terms of the transmission as well, and with the technological advances with respect to smart grid technologies that accommodate renewables generally, when specifically we think that that's another opportunity that should be seriously considered going forward.

Moving quickly to environmental attributes with respect to wind, I think it's hard pressed to find other generation sources that can match the fact that wind is a non-emitting source of energy — uses no water, there's no toxic or residual waste associated with it, and it's completely renewable.

Another important aspect of the environmental attributes of wind is the fact that when you look at the life cycle analysis of it — when you sort of take the entire equation in terms of how much energy and power is used to get a turbine to a location generating electricity — the aggregate number that we're starting to see with sort of the latest wave of technology is that it is producing more power than was needed to get it on-site within about approximately two years. Again, that's a statistic that other sources of generation, I think, are very hard pressed

to beat.

Referring to the economic benefits of wind generation, there are a number that I think are important and they are particularly applicable in Saskatchewan. I'll start with the landowner benefits. Again one of the important aspects to recognize with wind development is there is no template. There is no one-size-fits-all. I can't tell you, I can't give you a recipe book and say, if you go do this, this is what you'll end up with.

The presenter immediately prior to myself talked about the resource being primarily located in the south. While that's true, there are a number of micro locations where utility scale wind is absolutely appropriate. And I'll get into that.

But what we're finding again on aggregate is when you look at what landowners are negotiating with developers, it seems to be dropping out at around $4,000 a megawatt annually for install capacity on landowners' properties. That, if you translate that into a large-scale wind farm, it essentially is resulting in another cash crop that principally the agricultural sector is able to rely on. We have a rather thick portfolio of examples of people that were able to maintain their rural and agricultural way of life because of the existence of wind.

Wind does work with all forms of agricultural practices, in contrary to what you may have heard. Another important attribute of wind is the small footprint on the landscape. When you take into consideration the size of the pads, the access roads, the right of way, the transmission lines, the substations on a piece of property, you're looking at less than 3 per cent of the land mass is actually removed from whatever use it was previous. Again we think that's an important component that sets wind apart from other forms of generation.

As I say, the positive and symbiotic relationship between wind and the farming communities is being sort of borne out right across the country. With respect to communities and wind development, what we're seeing is on aggregate $9,000 installed megawatt is going through taxation rates, is going into principally operational budgets for municipalities. I can tell you in the southern part of Alberta, four companies paid $1.54 million in taxation revenues last year — and that's just four companies. So it is significant and it's substantial.

Another component based on aggregate numbers is that if you look at a 100 megawatt wind farm, that results in approximately 100,000 hours of labour, all of which are invested in the community where the projects are located. That translates into roughly half a million dollars per month through the construction of the site that gets spent in local hotels, coffee shops, restaurants, gas stations, hardware stores, etc.

With respect to the provincial governments, we've talked about the fact that the demand for power is going to continue to increase, and the cost of providing that power is also going to increase. There's been a cost convergence between renewables, again generally in wind, specifically with fossil fuels. And the advent of the carbon market will further push the pricing on fossil fuels.

There was a comment earlier this morning about the investment of capital going to Ontario with respect to the move forward with Ontario's *Green Energy and Green Economy Act*. That actually sort of can be ratcheted up to another level, and there is a significant outflow of capital from Canada to the United States. In the United States, there is a policy environment that is particularly conducive for renewable — and wind is certainly playing a significant role in that — and that has translated into significant dollars leaving this country and going to the United States. And so we think that that's something that, we certainly are interested in seeing that money stay at home.

So why Saskatchewan and why now? I think one of the really fundamentally important issues is Saskatchewan has a very unique and a very world-class wind resource. The wind fetches in this province are quite unique and are not replicated anywhere else in the country. The opportunity to tap into that is very good, and currently there is a very proactive and competitive investment community that's looking at developing that wind. I think it's important to . . . Alluding to the fact that there seems to be a recognition that it's all located in the southern part of the province, while that is true of what is referred to as class wind locations, there are a number of other locations that are now economically viable, based on technologies that are coming forward.

Again, Saskatchewan has a proven track record. You've got 172 megawatts of installed capacity. It's got one of the highest efficiency ratings in North America, and I think you can attribute that to both excellent wind siting, but also a very robust resource that is being tapped into.

I think another important aspect of why Saskatchewan is unique is what we refer to as a foundational stakeholder group, and that's the Aboriginal community. CanWEA has recognized this and last October we . . . The way we're structured is we have provincial caucuses, and then we have a variety of seminars as well as our annual conference that look at specific issues.

Last October we held our first Aboriginal discussion and seminar in Ottawa, which was particularly well attended — at the time it was the most well-attended and subscribed seminar in CanWEA's history. I can tell you that the Saskatchewan contingency was particularly engaged and particularly vocal in their support of this. I think one of the reasons you're seeing that is, with the uncertainty of climate change, there are a lot of communities, isolated communities that rely on winter roads to bring in their diesel generation. What they're seeing anecdotally in a very small number of years is winter roads are coming in later and breaking up earlier. And so the opportunity to augment their power systems with wind is of great interest.

Further to that, in a number of locations we've seen a variety of procurement processes that again have identified the importance of the Aboriginal community. In Quebec there is now a requirement, particularly in community scale wind, where the only people that are allowed to bid into the process are those which have Aboriginal groups as full partners in the process. The green energy and economy Act in Ontario also, as it was indicated in the presentation just prior to mine, a different pricing scale that identifies and sort of highlights the importance of the Aboriginal groups. The price for the feed-in tariff is thirteen and a half cents per kilowatt hour for a developer that comes in. If it's an Aboriginal group, it's 15 cents a kilowatt hour. So again there's recognition that that's

important.

Again, I appreciate the morning's been long, and I'll just wrap up. I would like to encourage this committee and the government and SaskPower to consider CanWEA's goal of looking at a target of 20 per cent of the generation mix in Saskatchewan coming from wind. We do think it is absolutely attainable with technology that is available today. That's not sort of a far-reaching goal. And we do see a lot of opportunity going forward.

[12:30]

And finally, as I was mentioning to Tim just prior to speaking with you this morning, CanWEA, the way we're structured is we have provincial caucuses that are active across the country. We currently do not have an active Saskatchewan caucus, but I can tell you with the advent of this presentation and the work that this committee is doing, CanWEA will be establishing a caucus.

CanWEA has worked extensively with the Ontario government for example in the various conversations that took place regarding the *Green Energy and Green Economy Act.* And we certainly would like to offer our expertise, not so much as we've got the answers as to what Saskatchewan needs to do — because as I say, there's no one size fits all — but rather we have the benefit of some expertise and some experiences from some other jurisdictions. So I'll stop it with that. Thank you, Mr. Chair.

The Chair: — Thank you for your presentation. Mr. Weekes has some questions.

Mr. Weekes: — Thank you, Mr. Chair. Thank you, David, for your presentation. Certainly wind power and wind energy is high on the priority list of options, there's no doubt about that.

Just a question generally about what Saskatchewan Power Corporation and the Saskatchewan government needs to do to facilitate more wind power in this province. Now we have net metering. We have power purchase agreements with cogen projects. Obviously anyone investing money's going to need a return on investment. Could you just flesh that out? What is needed by the industry in both returns and any other regulatory changes that may be needed?

Mr. Huggill: — Well it's an excellent question. And I think providing certainty, particularly to the financial markets, has been a key particularly in the last 18 months.

One of the things — and again this is articulated in the document that you have before you — in order to sort of get to 20 per cent, whether it's in a Canadian context or Saskatchewan context, we think there's a few crucial things that have to be in place. One of them is there has to be recognition of and fair value given to the environmental attributes. Again the carbon market will probably force that issue, but that will send a clear signal that this particular form of generation is in for the long run.

A clear procurement process that sort of gets away from the boom and bust cycle would also be very advantageous for the industry. A streamlining of the regulatory requirements; I think it's fair to say that there's no jurisdiction where it's easy to put this kind of commercial, light-industrial development forward. And what we're seeing is a great deal of overlap with respect to . . . Because it's new, there are very few municipal districts or councils that have bylaws specifically around the issue of siting wind farms.

That has been sort of a resource that CanWEA can provide in terms of, again, there's no template — we can't say if you have this setback you'll be fine because of the inherent differences in variables at each site — but what we can do is provide some contextual information around that.

And then finally I think, in terms of that certainty, where it fits and the investment in the infrastructure, I think will continue to be a clear signal, both in terms of the investment and the transmission that's required as well as the generation mix — identifying and indentifying a target that's achievable and somewhat aggressive.

Where we see other locations that have sort of identified a desire to have renewable and wind on their generation mix, we've seen a very, very competitive industry build up around it. And that's both in terms of the actual wind farms, but also the supply chain.

At our conference in Toronto this year, CanWEA announced we've now signed a strategic partnership, a MOU [memorandum of understanding] with the Canadian Manufacturers and Exporters group — one of the more powerful lobby groups in the country — simply because there's interest in the supply chain side of things. The more power that will be coming from this, the clearer the signal is that it's sort of here to stay in the long run.

Mr. Weekes: — Thank you.

The Chair: — Mr. Wotherspoon.

Mr. Wotherspoon: — Thank you very much. Also encouraged to hear the establishment of a caucus within CanWEA here in Saskatchewan. It's good to hear.

Specifically a question: we've heard from SaskPower it wasn't too long ago that 5 per cent seemed to be limitations as far as the balance or mixture of wind power within our grid. We're now hearing constraints around 8 per cent, yet we see jurisdictions around the globe and utilities that are advancing far beyond that. And we continue to hear up into the range of 20 per cent and above, and there seems to be a lot of compelling information that points to that being quite doable within our circumstance. CanWEA appoints directly to 20 per cent as a doable target.

I guess I ask you to substantiate what evidence or information supports that 20 per cent. You've spoken of the mechanisms that are needed to be in place to see that kind of investment, but in response I guess specifically to SaskPower's concerns around their constraints in balancing wind, what could you offer this committee at this point?

Mr. Huggill: — Not knowing specifically the arguments or the

perspective of SaskPower as to why they, you know, 8 per cent is sort of the number, it would be hard to do it now. But that's certainly something that the caucus will be actively looking into.

I think it's important to recognize that the reason we've identified 20 per cent is, one of the subtle important differences is that in order to achieve that, it means that the system has to be operated differently than it is right now. It's not just a case of bringing that on as a generation mix; the whole system and the integration of it has to be tweaked to accommodate that.

And that's exactly what we're seeing with respect to the investment of aging infrastructure, requirement to meet the demand in energy. And so it means that you're going to have to operate your grid differently. I can tell you that every utility and every system operator in North America is looking at strengthening the interties. And in Canada it's particularly important. I think it's fair to say that there's a lot of interest in the industry for export to the United States. There's no question that the California market is the one that's driving, you know, that entire market.

Right now, there's a lot of work that is being done in the United States. There's something referred to as Waxman-Markey Bill that is currently being reviewed that will establish a renewable energy standard for the United States. Part of that is the export, what is it going to look like to export power down to the United States. So that's one sort of component that Canadian developers are looking at.

But I think it's also important to recognize the intertie east-west so that we tie the Canadian grid together. We've talked about the importance of dialing into Manitoba because of its strong hydro resource. That will take a change in terms of how the system is currently operated, and that can be done with existing technology. So it's really a finessing of the power management tools.

In Alberta for example in 2006, there was some conversations and some concerns around you know this big wave of wind that was coming forward. And so they essentially put a threshold of 900 megawatts on how much could be installed on the system because they weren't sure what was going to happen with the system after that amount. Through very detailed conversations, with our association particularly, but some of the developers, it was determined that actually the system could accommodate significantly more than that.

The AESO [Alberta Electric System Operator] in Alberta has just announced that they're going to invest 3 billion in the southern portion of the province for specifically 2700 to 3000 megawatts of wind only. So it's sort of that tweaking of the system.

Another sort of tangible is both Ontario and Alberta are currently looking at forecasting — weather forecasting. That is particularly important for jurisdictions such as Saskatchewan that has a heavy reliance on fossil fuels because if you have a significant amount of wind on the system, you can accommodate when the wind is blowing through your ramping. And ramping up and down of particularly a fossil generation fleet, you know, takes some operation and some management. That can be accommodated through an accurate forecasting scenario. So we see that is actually going to be on the ground by January 1 in Alberta.

You know, I'm responsible for western Canada, so I'm interested in everybody getting along. But I'm certainly interested in, certainly encourage the conversations with Manitoba because of the strong hydro. I also encourage the conversations through Alberta as well as BC [British Columbia] because BC has also a very strong hydro resource and capacity — I mean, that's the storage for wind. That again is one more opportunity to smooth and firm the capacity of wind to be delivered.

So I hope that's a partial answer. And certainly I think it's an excellent point and one that we would really welcome the opportunity to work with SaskPower to, again, not tell them what they have to do but rather some options that may work in the Saskatchewan scenario.

Mr. Wotherspoon: — Thank you very much.

The Chair: — Mr. Allchurch.

Mr. Allchurch: — Well thank you for your presentation here this morning, or this afternoon I should say. In your booklet, you mentioned that you're calling on the provincial and federal governments to come up with initiatives to help with wind, and you've listed five priorities. Of the five that's listed in the book, you've got one there where it says, providing incentives for wind power in the province. What kind of incentives are you looking at?

Mr. Huggill: — Well currently the only incentive that exists in Canada right now is something called the eco energy renewable energy fund, which was established a number of years ago and is set to actually — this month, I think, this or next month — it will be fully subscribed two years ahead of time. Essentially the way we're interpreting that is that's a clear signal that there's interest in this.

There was some conversation in some of the earlier presentations, issues such as feed-in tariffs or the absence thereof. That's really the issue right now for the desire for incentives is in the absence of a policy regime — that is referring to some of the comments I made earlier — in the absence of something like a renewable energy standard for example. So if the government hasn't identified they would like X amount of power coming from renewable energy, in the absence of that, we see incentives as an opportunity to stimulate the economy.

EcoENERGY is the best example in Canada right now, which is essentially 1 cent of kilowatt hour in terms of generation that's applied. That, as I say, has been very, very popular with our industry. In other jurisdictions, we see taxation relaxations for 10 years for example of when they get on the ground.

So I can't give you a list specifically of what incentives will attract the most industry. Again that's very jurisdictionally specific and actually not only with the jurisdiction but also the municipality — the location, where it is in the province. So that's something that, you know, is a compendium to a policy

regime that we think would actually alleviate the necessity for incentives. Ultimately I think it's fair to say that's where we want to get to is being able to compete without the incentives. That's a long way away though.

Mr. Allchurch: — Thank you for that answer. You also mentioned that you've done an extensive amount of work in Ontario. And in Ontario, what kind of wind projects are there? Are they megaprojects or are they smaller ones distributed all over the province of Ontario?

Mr. Huggill: — It really is a combination of both those. We do see a lot of . . . There's no sort of standardized definition of a wind project. The way we typically break it down is there's community scale, which is anything under 25 megawatts . . . Sorry, individual use, up to 1 megawatt; 1 megawatt to 25 is community scale, and then anything over 25 is considered sort of utility scale. And we really do see the full array of projects moving forward in Ontario.

One of the bigger issues with respect to those projects moving forward is access to the transmission system, and so that really does dictate the size of the project, as does the location. You know, obviously the dense populations in Ontario impact some of the siting issues going forward. So that's really sort of a standardized answer.

[12:45]

Mr. Allchurch: — Are there more megaprojects in Ontario right now than there are smaller ones? The reason I ask that is because if you have a mega wind project you've also got to do something with your transmission lines, and that's very, very costly. So is there more megaprojects in Ontario setting up or are there mostly small ones?

Mr. Huggill: — I'm not sure what a megaproject is. We see everything from 25 megawatts right up to 300 megawatts. So it would depend on what your definition of that is. And again, you're absolutely right, the access to that transmission and what needs to happen . . . The Green Energy Act in Ontario is addressing the transmission needs in terms of building out in particular locations. And so what they've done is they've identified where the resource is and then they're going to build the infrastructure in and around generally some of those geographic areas.

Mr. Allchurch: — And my final question is, have you heard of any problems related to the wind energy, whether it's Ontario or wherever it is, as far as problems that the wind generation produces?

Mr. Huggill: — There's a lot of conversation, and as wind sort of gains in popularity there's going to be a lot more attraction and a lot more attention paid to the industry. So there's conversations around everything from wildlife mortality, for example — birds and bats is a very common one — noise setbacks, and the industry is working proactively to address those.

You know, a tangible example is bats. There's a lot of discussion particularly in southern Alberta about turbines and bats. It's important to recognize that right now. So our industry is actually working very collaboratively with the scientific community in terms of trying to identify what's going on.

Without getting into too much detail, the bats aren't actually being hit by the turbines. For some reason bats are attracted to the low pressure that happens immediately following behind the blade, so what is actually happening is something called barotrauma. The bats are dying from internal injury as opposed to striking the turbine. We don't seem to know why the bats are attracted to this particular, you know, portion, the lee edge of the blade, and so what we're doing is trying to figure out a mitigation to accommodate that. And we also don't know what the bat population is, so we don't know if this is having a massive impact and annihilating bat populations or if it's really not that consequential. It's important to put it in context.

With respect to bird kill and bird mortality, downtown Regina and downtown Saskatoon kill far more birds than the turbines do in this province. Domestic cats kill far more birds than turbines. The aggregate number based now on well over 50,000 turbines around the world is that there's less than one bird killed per turbine per year. That's sort of, you know, that's the statistical sort of sound bite but that's what the number falls out at. So with respect to bats, what we're finding is there may be an opportunity to wait until wind speed is slightly greater than it typically has been and that may be enough to decrease the area of low pressure which decreases the bats' interest in being attracted there.

So those are certainly the type of issues. Any sort of accusation or comment in terms of what the industry is doing or not doing, we take very seriously and get actively involved in that because as I said at the outset, we're wind, warts and all. If there are negative impacts associated with our industry, we want to make sure we address them.

Mr. Allchurch: — Thank you.

The Chair: — Mr. Belanger.

Mr. Belanger: — Thanks very much for your presentation. It was really professionally done and the books are also very impressive in terms of your industry and your association. For the average lay person and if one were to, on this committee, say well the question is posed to me, what's the difference between wind and how much can it generate in terms of electricity compared to a nuclear power plant, what the cost would be, how would you answer that question? Because obviously I don't have the background that you do, but in a side-by-side comparison, given everything, the nuclear costs, given the upgrade to the system, given the decommissioning of the actual site and the storage and so on and so forth, how would you characterize the argument of wind versus nuclear in terms of the cost?

Mr. Huggill: — Well I can sort of identify it in terms of . . . The cost is something that is difficult to identify simply because that's going to depend on where it's being applied and what the cost is going to be associated with that procurement in the jurisdiction. So that's a difficult one to address.

With respect to the difference between the two, I think it's important that, you know, you can't get away from the fact

there's — as I mentioned before — there's no residual toxic waste associated with wind. It is a generation source that is, I think, fairly well accepted and accepted across the public as well as, you know, a variety of different stakeholder groups. So it's, like you say, in terms of when you look at typically a nuclear facility, it's a significant amount that's going directly to baseload. So it really is comparing apples to oranges in terms of what it can do and how it would be applied. So it is a difficult answer to provide in terms of . . . I mean obviously I'm going to advocate on behalf of one and not the other.

Mr. Belanger: — Right. And I accept that argument, because obviously that's where you're putting your argument forward and that's your employer. But from our perspective as a committee and as a member of this committee, you know, we've advocated side-by-side comparisons. And yes, maybe, perhaps it's comparing apples and oranges here, but we've still got to have something tangible to bring forward to the public based on our findings. And we hear the people advocating for wind, solar, geothermal, conservation — some great arguments. But we need some specifics.

We need some compelling argument to the public out there as it's posed to me: well, Mr. Belanger, what's the cost of wind? What's the cost of nuclear? What is the lifespan? What are the benefits of either? And I'll give you the example. Some person came up and said we can put a facility in place that'll generate enough electricity for 3,000 households. So how do you compare that to a nuclear reactor? And how do you compare that to solar or wind energy? Because this was a biomass plant.

So I'm trying to wrap my head around some of these compelling arguments here. And please don't be worried; I'm not trying to ask you a loaded question. I'm just trying to ask a simple question the public's going to ask, is what is the difference, side-by-side comparison — cost, benefits, the whole bit — between wind and nuclear? And if they heat 400,000 households we have in Saskatchewan, will the power plant, nuclear power plant do that? At what cost? Can we meet those demands by energy alone or by wind alone? And at what cost? Those are some of the things that we're trying to wrap our head around.

Mr. Huggill: — And I certainly respect that. And I think part of that conversation has to include the fact that once the regulatory and approvals process is sort of cleared by a wind developer, that developer can be providing electricity to the grid within 18 months — that's an aggregate number. I suspect you would have a significantly longer time frame associated with a nuclear facility. As well I think there would be a lot more conversations taking place around that particular facility versus a wind facility.

And I think, with respect to a comment that was made earlier regarding transmission, nuclear facilities, because it is such a large and significant amount put onto the grid, that would take a significant reinforcement and re-enhancement to your transmission system that would have to be incorporated into the cost. For example with wind, right now we know that increasing levels of wind could be accommodated with the gradual transition that's already been identified, as opposed to anything new and unique.

But I certainly respect, you know, that that is . . . particularly in Saskatchewan, I mean, you know, the uranium resource is not to be underestimated, and I know that's an important part of the equation. And so, you know, that's certainly something that I think, you know, the Saskatchewan caucus of CanWEA would certainly welcome the opportunity of providing more specific input, both to this committee as well as the government going forward.

Mr. Belanger: — The other point I'd make, I guess, does your association monitor or compete with the nuclear option? And I'll give you an example. Like suppose Ontario was looking at refurbishing their Ontario hydro plant. You guys come along and say, well we got a better deal — cheaper, less environmental problems. Do you monitor whether governments are going to option A or option B? And do you actually compete against some of the other options in terms of representing your association's interests? So if a jurisdiction is looking at meeting demands like Saskatchewan is, do you actually go in there and research and compete and monitor what the other groups are doing to get that power contract, so to speak?

Mr. Huggill: — CanWEA is really a membership-driven association. So if our membership asks us to do that, absolutely we would.

And we have and we do advocate on behalf of, you know, more wind generation going forward. But what we do is we advocate on behalf of wind. We don't necessarily get into a lot of detail as to what's wrong with other sources. We focus on the positive in terms of why we think wind is a better solution in some jurisdictions. So I hope that's a . . .

Mr. Belanger: — Yes. No, I often use that phrase — the sign of a good salesman is an ugly guy with a pretty wife, and I got a pretty wife.

But I wanted to point out that you look at some of the situations with Saskatchewan when you see land being purchased, you know, a panel of experts advocating the uranium issue. You see $3 million put in one particular basket of possibilities, then you'd begin to consider well, you know, has the train left the station?

And that's why I think, looking at all these other alternatives, one begins to question how do we do the side-by-side comparisons as a committee? Because that's really crucial to our work; we want to see a side-by-side comparison. And when I go along and say, well you're comparing apples and oranges — I'm using your words — it doesn't really give us a good, compelling argument. And I'm not going to be a very good salesman for your particular energy source. And that's why I'm not trying to simplify it. I'm trying to put it in a basic language in which people could understand.

That's the fundamental flaw that I have with this whole process, is we're not getting the adequate resources and the experts and the professional people to give us those answers so we're able to share with the public. And a better informed public can make a decision on this $15 billion price tag. Because SaskPower's looking at spending $15 billion over the next number of years. And what I'm afraid might happen if we don't get this right, it

will be a $15 billion environmental deficit left by those people advocating for one option.

So I'm trying to make sure that we have the compelling, hard data to do the side-by-side comparisons based on experts' opinion, not political rhetoric. I'm there to make sure that the cost and the benefits and the stump to dump, so to speak, of any proposal, all the costs are fully incorporated. And then people of Saskatchewan have a well-informed base in which they can make the decision on it. So that's the reason why it's really crucial for us to get that information.

Mr. Huggill: — And we would certainly, through the Saskatchewan caucus, provide you the specific information exactly on what the wind benefits and costs would be. And that would be our focus as opposed to a comparison to other forms of generation. We can absolutely give you all the data that you could possibly want on wind.

Mr. Belanger: — Yes. My final question is, will your association or can . . . can and will your association give us that side-by-side comparison?

Mr. Huggill: — Yes. We'll provide you data on wind. That's our focus. So we wouldn't, as I said earlier, we won't sort of comment on the problems or what we see as issues with other forms of power generation. We focus solely on wind. We advocate on behalf of wind.

Mr. Belanger: — Okay. Thank you very much.

The Chair: — Mr. D'Autremont.

Mr. D'Autremont: — Thank you very much. And I'd like to welcome you to our committee. And after listening to your presentation, I can certainly understand and believe that you are an expert on wind, and so thank you for coming forward.

A couple of the comments that you made caught my ear. You noted that there was a rise in demand for electrical generation in . . . or usage in Saskatchewan and that we have an aging infrastructure, both in generation and in transmission. There have been proposals come forward for the development of new generation. And the demand has been that new transmission associated with any new generation be priced in as part of that new generation. Do you think that's the way it should happen? Or should the new transmission or transmission upgrades be part of the overall general infrastructure of SaskPower rather than associated with any new generation, such as a new wind project?

[13:00]

Mr. Huggill: — I think the answer to that is really up to the utility, SaskPower. We've seen examples of where both has happened, where for example in Alberta there's an opportunity to build what are referred to as merchant lines. We've seen other areas that have built that cost into their procurement process. So it's really going to depend on the procurement process. I think one of the things that would be required is sort of an upside, you know. What would be the benefit to the industry to incurring those costs? And you know, that would have to obviously be investigated a little bit further.

Mr. D'Autremont: — So you're saying then that we should be looking at the new generation providing for the new transmission service. Or should it simply be built into the price, that new generation would be paid for by the customers in Saskatchewan?

Mr. Huggill: — What I'm saying is I think the best way for it is to develop a procurement process that makes it as equitable to the ratepayers of Saskatchewan as possible. That's not a direct answer. But it is really going to depend on that procurement process and what the cost is going to be to the industry.

Mr. D'Autremont: — And I guess it comes down to what's needed for new generation and what's needed for rebuild, as well, for older infrastructure such as smart transmission systems.

Mr. Huggill: — Exactly, yes. And that's all part of the conversation that has to take place in terms of identifying that. The other thing that will be important is looking at the geographic opportunity in terms of, you know, how big an area you're looking at with respect to those transmission needs.

Mr. D'Autremont: — Another thing that caught my ear was the landowner benefits of wind. What's been Saskatchewan's experience in that? And I don't know if you've looked at that. What benefits have landowners and/or municipalities had from the positioning of wind generation on their land or in their jurisdictions? I think we have three projects now and a fourth one that SaskPower was talking about to come online in 2010, 2011.

Mr. Huggill: — I don't have any specifics on that simply because that information hasn't, we haven't researched that. That hasn't been made available to us. So I couldn't comment on that, but that's certainly something that we could look into for sure. And we will be through the Saskatchewan caucus, which exists in my mind only, you know, in this presentation that you've just got. So it's a newly minted group. They don't even know they exist yet, but they'll be very actively involved, I can assure you.

Mr. D'Autremont: — Well that I know of, I don't believe that there is much, or extremely limited, landowner benefits to date. I think the SunBridge project, which is 11 megawatts, there was some benefit to landowners and municipalities. But that I know of, I don't believe there's any benefit to landowners or municipalities in the SaskPower projects to date.

Mr. Huggill: — Okay.

Mr. D'Autremont: — A third question. SaskPower gave us some information on what they estimated the costs of wind generation, new generation, to be in the range of —I think 8 to 13 cents a kilowatt. And I can't remember if we asked this question or not, but if that included backup costs. So wind is intermittent energy. It's not there all the time, and yet everybody expects their lights to come on all the time. The alternate costs of capital for the subsequent generation that's needed to provide that electricity during the times when wind is not available, do you have an estimate on what kind of costs are associated there? If you were putting up a plant to provide wind generation and had to also provide the backup energy to that,

what kind of costs are we looking at?

Mr. Huggill: — I think it's important to recognize that if I were putting up a plant, I wouldn't need backup generation. And that's been the case going back to a comment I made earlier about operating and managing your system slightly differently than you typically have.

Actually there's been a lot of discussion that for every megawatt of installed capacity, you need an equivalent megawatt usually of natural gas because it's, you know, the cleanest form of generation. That's actually not the case, and we haven't seen that coming forward in the procurement process.

So I think that the numbers that SaskPower has given you, you know, somewhere between 8 and 13 cents, is fairly representative of what we've seen across the country. And that would be the price. There wouldn't be sort of an ancillary or an add-on for the backup that's required.

Mr. D'Autremont: — I asked this question of Mr. Prebble when he was doing his presentation and perhaps you have information as well. Are there any studies that we could access that provide information on a large distributed wind generation system that shows what kind of generation you can get from it on a regular basis — and I understand you may be able to get baseload, you may not be able to get baseload — some information that would allow us to make that kind of a determination?

Mr. Huggill: — So the short answer is yes. I made a note of it when you asked Mr. Prebble. And I can't quote them to you chapter and verse, but they do exist.

The National Laboratory group in the United States undertook one for the Department of Energy there. So yes, those studies do exist. And I've made a note in my book to forward some of those to the committee, you know, once I have access to those. So yes. I don't have them, but they do exist.

Mr. D'Autremont: — Okay. Thank you very much.

The Chair: — I would just like to ask one question before we wrap up here. We have heard somewhat conflicting statements about the cold weather and the 30 below cut-off. And then we heard a presenter say that it could be extended further with further investment. And this morning actually, a presenter narrowed that down to what it would increase costs. I believe it was one to one and a half cents a kilowatt hour. Is that what your industry people are telling you as well?

Mr. Huggill: — I can't comment on the price per kilowatt hour in terms of, you know, an added cost. But I can tell you that with respect to safety standards, particularly ice throw, as technology continues to improve . . . I talked about some operational techniques to mitigate the issue associated with bats. The same is true with safety issues. There's a number of developers that are looking at changing the way their wind farm actually operates.

And it's not so much cold weather. It's cold weather, but it's also humidity. It has a lot to do with, you know, wind patterns and what happens with respect to as soon as the ice accumulates on either the tower or the nacelle or the blade, how quickly the sun comes out and warms it. There are some instances where maintaining normal operational practices is the best way to go. It sheds the ice quicker. There are some instances where feathering and shutting down the turbine will allow the ice to essentially shed. So there are a lot of operating techniques that can be associated with that, but I don't have any costs associated specifically to address that particular issue.

The Chair: — The understanding I think I have is that right now 30 below is kind of a hard number as far as when electricity productions stops. Am I right with that?

Mr. Huggill: — Again, I don't have a specific answer, but I'll certainly look into that. I'm not sure that that's a hard and fast rule. One of the issues associated with wind is, as it gets colder, the kinetic energy of it actually increases. So you actually produce more wind when it's colder. I don't have that level of expertise, but I will certainly seek to get that and provide that to the committee as soon as I have been able to identify that.

The Chair: — Okay. Well I'd like to thank you on behalf of the committee for taking your time today and giving us a great presentation. Thank you.

Mr. Huggill: — Thank you.

The Chair: — I'd also like to make the committee aware that our last two presenters today have had to cancel. We also have not received any further requests for people to appear, so I would entertain a motion to adjourn. Mr. Weekes. All in favour?

Some Hon. Members: — Agreed.

The Chair: — Carried. This committee now stands adjourned until 10 a.m. tomorrow morning.

[The committee adjourned at 13:08.]