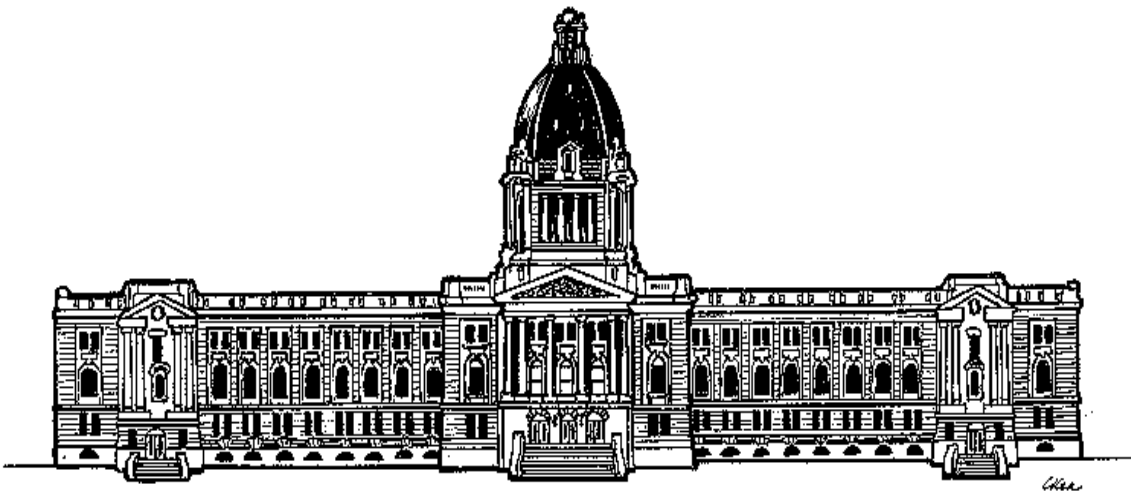




# **STANDING COMMITTEE ON CROWN AND CENTRAL AGENCIES**

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## STANDING COMMITTEE ON CROWN AND CENTRAL AGENCIES

Mr. Tim McMillan, Chair  
Lloydminster

Mr. Buckley Belanger, Deputy Chair  
Athabasca

Mr. Denis Allchurch  
Rosthern-Shellbrook

Mr. Fred Bradshaw  
Carrot River Valley

Mr. Dan D'Autremont  
Cannington

Mr. Randy Weekes  
Biggar

Mr. Trent Wotherspoon  
Regina Rosemont

[The committee met at 10:00.]

### **Inquiry Into the Province's Energy Needs**

**The Chair:** — Well, good morning. I'd like to call our committee to order. I'd like to welcome everyone to a meeting of the Standing Committee on Crown and Central Agencies. Today is the third day of our committee's inquiry into Saskatchewan's energy needs.

I am Tim McMillan, the Chair of the committee. I would like to also introduce the other members of the committee. We have Mr. Hickie, Mr. Bradshaw, Mr. Allchurch, and Mr. Weekes. The Vice-Chair is Mr. Belanger, and Mr. Wotherspoon. We are also joined today by another member, Mr. Taylor.

All 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 [www.legassembly.sk.ca](http://www.legassembly.sk.ca) under What's New and clicking on the link for 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 meetings outside of Regina. Check the website for information regarding locations, cable companies, and channels. The 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 for presentations. I will be asking all witnesses to introduce themselves and anyone else that may be presenting with them. Please state your name and, if applicable, your position with the organization you represent. If you have written submissions, please advise that you would like to table your submission. Once this occurs, the 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 presenters to focus on the following 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. And this will allow for 10 minutes of questions following, but if there is sufficient time, we will continue on with further questions from the committee. I will then ask you to proceed with your presentation. Once your presentation is complete, the committee members may ask questions of 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.

Our agenda allows for a prescribed time period for each presentation which will include both the presentation and question and answer. Afterwards I would like also 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 would now like to thank our first presenter and ask him to go ahead.

### **Presenter: CCG Trade & Development Corporation**

**Mr. Kutcher:** — Good morning. Thank you very much, Mr. Chairman. My name is Dave Kutcher, and I am a partner in a company called CCG Trade & Development Corporation. We are a small Canadian company that specializes in developing business relationships between Chinese and Canadian companies in various sectors. I'm here to talk to you today about biomass power generation. And we have an agency agreement with the Chinese company called China National Machinery Import & Export Corporation, and they are a very large Chinese engineering firm.

And I'm pleased to provide a presentation to you today about our interests. And I'm pleased to table the two documents that you have in front of you in regard to the presentation, and some other information which I will speak to in my presentation.

So as I said, I'll give you a little background on our company. CCG [CCG Trade & Development Corporation] is a Canadian company. We focus on developing business relationships between China and Canada, and we work in various sectors of the economy including energy, mining, manufacturing. We have an agency agreement with CMC, China National Machinery Import & Export Corporation, and they are China's largest and oldest exporter of turnkey power plants. They have expertise in a number of other sectors, but one of their biggest areas of expertise is power generation facilities.

As I said, they're an engineering firm, so they don't manufacture any equipment. They source equipment; they do the engineering and the project management. In 2008, their revenues were nearly 2 billion — 1.8 billion. Basically CMC does power projects including thermal projects — anything from coal, natural gas, petroleum, coke, biomass, as well as hydro projects.

Currently to date, most of their business has been in the Middle East and the Far East. They've developed power plants in Pakistan, Bangladesh, India, Syria, Vietnam, Laos, Philippines, Malaysia, Indonesia, Turkey, Yemen, Sudan, Iran, Iraq, Nigeria. The list is lengthy — tremendous amount of experience. They also have expertise in other sectors such as mining, manufacturing, and telecommunication.

As I mentioned, we have an agency agreement from CMC. CMC is interested in developing the Canadian market, and we have an agency agreement to work with them on that. And I'm here today to talk to you about what we see as opportunities in biomass power production in Saskatchewan.

What we really want to do . . . What is our interest in Saskatchewan? We would like to partner with First Nations groups, northern communities, or forestry operators to develop biomass power generation in the North to supply to the SaskPower grid.

We have a general agreement with the Flying Dust First Nations to look at a facility in the Meadow Lake region. That

facility could be anywhere from 2 by 3 megawatt to 2 by 15 megawatt, depending on the identified biomass sources, and more importantly the related economics to those various biomass sources because whether you're looking at an existing pile of residue or going into the bush and chopping trees and limbs and that to get your biomass, the economics are very different, so of course the size of your plant will be very different. But we're looking at utilizing wood residues and agricultural residues for the facility.

We're not just interested in developing one facility. We would like to see a number of facilities across the North. We think there's opportunities for multiple facilities. CMC nor CCG wants to own these facilities. They would be majority-owned by First Nations people or local industry or the forestry industry and to the benefit of those groups. They would employ First Nations people and the forestry industry professionals. CCG or CMC are not interested in bringing Chinese people to run these facilities. They want local people to manage and operate them.

China has a considerable amount of expertise in small-scale biomass power production — anything from the 2 by 3 megawatt to 2 by 15 biomass-fired steam facilities. I was in China in June, visited a little 2 by 15 plant processing 700 tonnes a day of various biomasses — wood waste, agricultural straws, peanut shells, corn stalks, etc. This plant was in rural China, an economically depressed region. And they are paying — they contract out for the biomass supplies — they're paying \$35 a tonne for biomass delivered to the site. So as you can imagine, in an economically depressed region such as rural China, that's a pretty significant dollar. And these plants are having a pretty significant impact on those regions in China.

Their plants are clean. They meet European emission standards, and they are a good employment generator. A 2 by 15 facility over there employs about 100 people, and they're good skilled jobs — anything from steam engineers, pipefitters, control room personnel, maintenance engineers, etc. These are well paying jobs. And they're starting to cookie cutter these operations in China.

And basically it takes some 14 months to construct and commission one of these plants. So we're not talking an opportunity that's five years out or 10 years out here. We're talking something that within a couple years we could have up and running in Saskatchewan. CMC would provide a turnkey plant, train local employees to manage and operate the facility. And we think that we'd be the most competitively priced option out there. We think that we'd be well under what you would compare to in North American technology.

And one of the most important points is that China has a very aggressive export development program right now. And that will allow us, those programs will enable us to bring 85 per cent of the project financing to the table for these projects. So in essence, our Canadian partners, our Saskatchewan partners are only required to bring 15 per cent to the table. So that makes a real difference if you were to compare that to something like North American technology where I think the price would be significantly more.

And then if you're looking at conventional North American financing where you're looking at 30 or 40 per cent equity, if

you look at a \$20 million plant, in our case you're looking at a \$3 million contribution from a local First Nations group or industry. In North American technology, you could be looking at the need for \$10 million in equity. And so all of a sudden for a small community or a small group, \$3 million is manageable, but \$10 million is just out of the game. You can't even consider it; it's just impossible to raise that kind of capital. So that's one of the key advantages that we bring to the table for this type of project.

But what really am I looking for from the committee here? We need something to hang our hat on in terms of revenue from this facility. We have to be able to do a feasibility strategy and a business plan. And so we need to know what our revenue's going to be for this type of facility to be able to build that business plan.

And what I'd like to see is a recommendation that SaskPower look at doing something similar to Ontario and having a standard offering for this type of power generation. And Ontario of course has a standing offer for all types of renewable, and the one document that I give you basically lists all of the prices that they're willing to pay for the different generation. And they will pay more than 14 cents a kilowatt for biomass, depending on the facility size and the ownership, and they encourage local community and Aboriginal ownership. So we'd like to see the same in Saskatchewan to help our project, drive our project forward. They offer a 20-year contract as well as a built-in inflation component to that.

As well there's the federal government grant of 1 cent a kilowatt for plants built by March 31, 2011. Now that's a pretty tight time frame for us to get a plant up and running. It's not that far away. But we hope that the federal government would extend that program.

But why do we need a standing offer? Well biomass for a facility like this accounts for well more than 60 per cent of your operating costs, so a small change in your biomass costs equals a large change in your power production costs. So we're looking at a fairly reasonable standing offer that allows us to develop our business plan, which is sized in accordance with the various biomass sources and their related costs.

For example, if you're only looking at, if SaskPower is looking at maybe a standing offer of 10 cents, you're not going to get a lot of biomass development in Saskatchewan. Basically at that kind of rate you're looking at, the only viable option is maybe some existing piles that are in the North already that you could maybe get for a very reasonable cost which would make your plant profitable, but you're not going to be going into the bush and harvesting any wastes or pulling any wastes out of the bush.

But if you look at 14 to 16 cents a kilowatt, then some of these other options start to become viable. You can potentially partner with existing logging operations, and while they're in the bush cutting trees, you could potentially process tops and limbs and uneconomic stems and have them chipped and transported to the facility. So then you'd be able to build a much larger facility because the economics would make sense.

So we'd be looking at that angle as well as at the higher price, you may have some opportunities to source some agricultural

straws or even some animal wastes if there's some livestock facilities in the region. But you've kind of got to need to know what your revenue's going to be before you can build that business plan or strategy around it.

So if we had a standing offer, we'd then be able to of course strike the partnerships with the First Nations people and forestry industry and develop our feasibility analysis and business plan, and then we could move forward to construction quite quickly. But without it, we're kind of frozen. In terms of the benefits for Saskatchewan, we see a number of benefits of course, and one of the biggest one of course is wealth creation in the North. This is a very . . . be a very important economic generator. And as I said, these plants would be owned by communities, First Nations.

[10:15]

As well it would be good jobs for First Nations people in northern communities or forestry operations. It would be an important added revenue source for forestry operators if we're able to go into the bush and source biomass from existing logging operators. However before development of such a standing offer, the Softwood Lumber Agreement would have to be reviewed to make sure there's no contradiction to that or contravention of that because we wouldn't want the standing offer to be seen as an indirect subsidy of anything to the logging operation. So there'd have to be some consideration towards that or some analysis towards that.

There's potential for stimulation of industrial development. These plants produce a lot of heat along with power, and so you'd be able to maybe have that facility coexist with other businesses that need a source of heat.

It would allow healthy forest development because now you're taking out limbs and branches that would normally be left on the forest floor, piled up, just rotting; or uneconomic stands, it would allow for a healthier forest in the future. It would qualify for Green Power generation credits of course because it is renewable energy. And it's a steady power supply; it's not intermittent. We're not relying on the wind to blow. These plants operate 24-7 year round, so this is a steady source of supply.

And last but not least, we're not asking for any money from SaskPower. You know, this is we're coming to the table with the capital to do these projects, so this reduces SaskPower's capital needs in the future for adding generation capacity.

That's my short presentation. I'd be pleased to take any questions that you may have.

**The Chair:** — Well thank you for your presentation. Mr. Taylor.

**Mr. Taylor:** — Indeed, thank you very much. Can you give us some idea of, a little better idea of size? You talk about small-scale 2 by 3, 2 by 15. What gets powered by 2 by 3, 2 by 15? Can you give us some examples of how much power that is in, we'll say, a community like La Ronge or La Loche or something like that?

**Mr. Kutcher:** — Yes. I believe a typical household would use about 1 to 2 kilowatts of energy. So 2 by 3, which is 6 megawatts — 6000 kilowatts — would roughly power up to 3,000 houses, I believe is sort of a rough estimate. But then of course if you've got businesses as well, they'll use a lot more power. So it kind of all depends. I don't know specifically, if you talk about specific communities, I couldn't tell you what La Loche uses for power, just off the cuff. No.

**Mr. Taylor:** — Okay. And how much of that power does the plant itself use?

**Mr. Kutcher:** — I couldn't answer that. I don't think it'd be very large, but I don't know specifically. Sorry.

**Mr. Taylor:** — Okay. So you're looking for SaskPower to come forward with a standing offer comparable to Ontario's 14 cents. SaskPower was here two days ago, indicated that their current average cost to produce power in Saskatchewan is 6 cents a kilowatt hour, and then there are ranges for new power in Saskatchewan ranging from 10 to 15 cents per kilowatt hour. You're asking for 14. Have you had discussions with SaskPower along that line yet? Do you feel that, although 14 cents is needed, do you think 14 fits the Saskatchewan mix?

**Mr. Kutcher:** — We haven't had specific discussions with SaskPower yet on this facility. As I said, I was in China in June, and we've just sort of struck our initial partnership, so I haven't been able to meet with SaskPower on that. You're correct in that we are on the high side of power costs, and until we really get into our specific analysis, I can't tell you how big of a plant that we could build if there was a standing offer for 14 cents. We still need to do that analysis of what the specific costs are going into the bush and getting these sources of biomass out of there.

I met with Mr. Ruggles in the Department of Energy and Resources, and they are getting a computer model which will allow us to look at the existing forest stands that we have in the province and the existing operations, the logging operations that are going on, and plug that into this computer model. And we'll be able to then determine what the economics would look like of getting biomass chipped and delivered to a certain site. And then from there, we'll be able to plug those economics into a business plan and determine really is 14 to 16 cents, is that sufficient? I mean we're looking for something similar in Ontario, but specifically we need to do our analysis to confirm that that is sufficient to do this job.

**Mr. Taylor:** — Okay. And just for interest's sake, you're indicating 85 per cent of the project would be financed outside the local area. How much of that 14 cents would end up going back to those who are financing the plant?

**Mr. Kutcher:** — Well each power plant we would put up, we would negotiate the, sort of the equity portions that would go to the local community. As I said, they'll be majority owned by local Aboriginal groups or industry, so there might be a small equity portion by the Chinese partner which would then have a part of the profits. But as I said, each of these will be negotiated separately with the individual groups.

**Mr. Taylor:** — You talk about the ability to operate 365 days a

year. Is there no downtime necessary, no maintenance or cleaning regime necessary? What about reliability and downtime?

**Mr. Kutcher:** — No. I said they run 24-7, not 365. Because of course there will be some maintenance; there's no doubt about it. As I mentioned, they are 2 by 3, or 2 by 15 facilities which means there's two sets of everything. So I would, in terms of downtime, you'd probably put one set down, do your maintenance, and then put your other . . . And so you've got at least some generation going all the time.

**Mr. Taylor:** — Do you see this pulling a community off the grid, or is a tie to the grid still important? Well that's my first question.

**Mr. Kutcher:** — I guess it could be either, but we are looking, like I said in my presentation, for SaskPower to be offering, to be buying the power. I don't think it's feasible for a northern community, if we are off the grid, to pay the 14 cents or 16 cents a kilowatt, when if they feed it into the SaskPower grid, then they can buy the power back at the 6 or 8 cents retail rate that everybody else in Saskatchewan is paying.

**Mr. Taylor:** — Okay. So you're seeing this primarily as generating power for SaskPower, as opposed for use in the immediate area. So the grid is primarily for export, as opposed to maintaining the ability to service a community should there be downtime or those sorts of things.

**Mr. Kutcher:** — Correct.

**Mr. Taylor:** — Okay. That's all my questions. Thank you. And thank you.

**The Chair:** — I have a couple of questions. You say there is a little more work doing the math on the report. What is your potential timeline? When would you be ready as a company or one of your partnerships to go forward to SaskPower?

**Mr. Kutcher:** — We would hope within the next two or three months. And it kind of depends on Mr. Ruggles getting the computer program up and going, and I think it's forthcoming fairly quickly. And so then we would then work with the Energy and Resources people to do those numbers. So hopefully in a fairly quickly time frame.

**The Chair:** — And your company, has it got any working models in North America doing a similar type thing?

**Mr. Kutcher:** — No. As I said, CMC doesn't have any operations in North America at present. They have done biomass plants in far Eastern countries, but they haven't done any in North America, no.

**The Chair:** — Thank you. Mr. Belanger.

**Mr. Belanger:** — Thank you very much. I'm keenly interested in some of the information that you presented, and thanks for participating in the process because it's also an educational opportunity for us.

But in terms of the actual plant itself, what is the plant life of,

say, of one of your plants that you're proposing, and what would be the cost? I noticed some percentages in terms of support, but what are the hard costs for one plant to be built?

**Mr. Kutcher:** — Well, in terms of lifespan, I think we're looking at probably 20 to 30 years, somewhere in there, for the equipment. But in terms of cost, it's sort of a general ballpark. You're looking at about 3 million a meg, somewhere in there.

**Mr. Belanger:** — And in order to drive your, say as an example, your wood waste, is there a cubic metre volume each year that you would consider to be an adequate supply for one of these plants?

**Mr. Kutcher:** — Well basically every megawatt you produce requires about 20 tonnes of biomass, slightly more than 20 tonnes of biomass. So as I give the example, a 2 by 15 requires about 700 tonne a day, which is just slightly over the 20 tonne per meg. So you would size it in accordance with what biomass you have locally available and price that meets the, you know, what you're going to get for your revenue in the end and makes your plant profitable.

**Mr. Belanger:** — Right. So, sorry, I'm having trouble. I was not very good in math when I was in school. I was more good with speeches, better at speeches. But in terms of the tonnes versus cubic metres, how would you translate that, because forest companies like to use cubic metres.

**Mr. Kutcher:** — And my math is bad on that as well. I couldn't tell you how many cubic metres in a tonne.

**Mr. Belanger:** — Okay. And obviously the economics of the actual project itself is all dependent on location because you obviously want to have the centre of all your delivery where it's cheapest for transportation, in the centre of your, as an example, of your biomass supply. Obviously Meadow Lake's a good choice. Are there any other northern communities that you evaluated in terms of location in relation to the biomass supply?

**Mr. Kutcher:** — Yes. As I said, we're not looking at just development of one facility; we're looking at development of multiple. So when we look at that model that's available, we'll be looking at a number of different areas in the province to see what's available and what makes most sense — absolutely.

**Mr. Belanger:** — And the third question I have is in terms of, I notice that — and I say with all respect to the First Nations — but in the northern communities, non-First Nation Aboriginal groups would consist of the Métis communities. Places like Buffalo Narrows, Ile-a-la-Crosse, La Loche, Pinehouse, largely they are referred to as northern communities but, you know, one can easily make the assumption — northern communities/Métis communities. So I'm pleased to see that when you use the word, Aboriginal groups, that you are inclusive of both the Métis and the First Nations, which are two distinct groups. And I think a lot of Métis communities will be keenly interested in some of the proposals that you have.

What I wouldn't mind saying in the next election is a vote for Buck is a vote for a power plant. It's a catchy slogan so I want to, I just thought maybe I'd throw that out there. What I'd like to also point out is there's a lot, there's a lot of keen interest in

your proposal.

**Mr. Kutcher:** — Thank you.

**The Chair:** — Mr. Bradshaw.

**Mr. Bradshaw:** — Yes. I'm just interested, so you want to . . . SaskPower would actually look after the distribution of this? So then it would have to be, SaskPower would be the ones providing obviously all the infrastructure coming out from the plant. Is that correct?

**Mr. Kutcher:** — And I guess that would have to be worked out with SaskPower, but I would probably foresee that the plant would probably be responsible for paying to be connected to the grid, and then the SaskPower grid would be responsible for transmission wherever the power would be used. But I would expect that the connection to the grid would be probably a responsibility of ours. And then it would just become basically part of the SaskPower mix of power distributed throughout the province.

**Mr. Bradshaw:** — Okay. Actually that was the only question I had.

**The Chair:** — Mr. Wotherspoon.

**Mr. Wotherspoon:** — Thanks for the presentation here today as well, really good information. When you're looking at these plants — let's go simply with the 2 by 3 megawatts — how many jobs, ongoing jobs would that create?

**Mr. Kutcher:** — Well I had given the example of 2 by 15 employs about 100 in China, but I have to admit that China does tend to over-employ because labour is quite cheap in China. But a 2 by 3 — basically in the plant running 24 hours a day, just the people in the plant — you're probably looking at about a dozen people running that facility. And that wouldn't include though probably your biomass people — the guys that are, you know, wherever you're getting your biomass source from. So there'd be added jobs there.

**Mr. Wotherspoon:** — Thank you. Then just if you could expand a little further, just as how this finance structure would work, and then how majority ownership would still be retained by the local community or First Nation or RM [rural municipality] or industry or Métis community with 85 per cent financing coming from Chinese investment. Is that correct? Just wondering then how that's structured back to majority shareholder or majority ownership for the local community.

**Mr. Kutcher:** — Basically it's through their export development program. And it's a loan. It's debt. It's 85 per cent debt. And so your 15 per cent contribution is your equity contribution.

[10:30]

**Mr. Wotherspoon:** — Well thank you. We'd encourage you, I think as our Chair said, to expand further when you get some of this information as well from Energy and Resources, as it relates to being able to cost some of the biomass product to understand . . . It might be \$35 a tonne in China; it'd be really

important to know what that is in Canada.

**The Chair:** — Mr. Taylor.

**Mr. Taylor:** — Yes. Thank you. Just a couple of other things came to mind when Mr. Belanger was talking about supply and security of supply. What's your assessment currently about the state of the forest industry as it might apply to this? The forest industry generally has been acknowledged as being one of our sectors in crisis. We're hardly producing any product, let alone any waste. How do you see this crisis in the forestry industry affecting your, perhaps, security of supply?

**Mr. Kutcher:** — Exactly. And that's a very critical point because when we do the analysis about the potential supply of biomass, we'll have to take into account the risks associated with that security of supply and will our logging operations continue to be able to supply whatever size of facility that we decide to put up. So we have to take into consideration that risk. And so we will also look at potential sources of supplies, such as if there's agriculture residues in the area that also make economic sense, or animal waste, or any other sources of biomass, and then we'll have to make a final assessment on what we're willing to risk in terms of plant size and that security.

**Mr. Taylor:** — Okay. This may sound like a bit of a naive question. I should know the answer to this, but I don't. Fire waste — is that considered suitable supply? In other words, if a fire has run through and you've got partially damaged stands, can that waste be cleared and used in the plan?

**Mr. Kutcher:** — Yes. As long as there's still good, usable carbon in what's left there, if it hasn't burned out. Absolutely.

**Mr. Taylor:** — And can you explain a little bit more about your concerns with the softwood lumber agreement. You'd mentioned that in your presentation.

**Mr. Kutcher:** — Yes.

**Mr. Taylor:** — I'd just like you to expand a little bit on what you mean about caution towards that.

**Mr. Kutcher:** — I'm just cautioning that we probably have to take it into consideration. I had a discussion with our trade policy people in government here and they just cautioned that there may be some implications on how it's structured or how it works so that it wouldn't be in contravention of the softwood lumber agreement and seen as an unfair subsidy supporting our lumber operators or our logging industry. So that was sort of the concern was that somehow this would be seen, if SaskPower was to offer a good amount for power production from wood wastes, that it somehow would be seen as an indirect subsidy to our lumber industry. And so we just have to be cautious of that, probably do some examination, get some legal opinions on it so that it's structured properly to not contravene that agreement.

**Mr. Taylor:** — All right. Thank you very much.

**The Chair:** — Mr. Belanger.

**Mr. Belanger:** — It does seem odd in a sense that — I know

it's not a free trade debate — but in a sense that on the softwood lumber agreement that the US [United States] of course takes us to task. The net result is there's more mills in Saskatchewan and the country closing down. Now to add insult to injury, obviously as long as they continue taking us before the courts, the longer that the Americans are able to stop the production of softwood in Canada, then the more the mills will suffer and then more mills will close. So now you're saying that the province is telling you that this might be challenged under that particular agreement because it might be considered an indirect subsidy.

**Mr. Kutcher:** — I'm saying we have to do that analysis just to be sure where we might stand. I would hope that we're not contravening anything. But I'm just cautioning that before we would forge forward that we'd have to do that analysis because there is that danger.

**Mr. Belanger:** — No, I would just caution you to watch the whole sky-is-falling scenario because I don't believe, in my experience, that that so-called worry is going to impact us in the production of power through our wood waste.

**Mr. Kutcher:** — Yes, and I would hope the same thing because if you look at . . . Ontario is doing it. Ontario does have a standing offer. So how can Ontario do it and Saskatchewan not? It would be a good question.

**Mr. Belanger:** — Exactly. And I think one of the things that's obviously very important is that if that argument comes forward . . . Because we're all after power production. That's the purpose of this committee meetings. And obviously cogeneration or biomass generation is pretty darn important. It's a pretty big piece of the pie. So when you look at all the scenario and you look at the forestry sector per se, there's not much activity there at all. And again, it's because of the softwood dispute.

Now the other question that I had is on the affordability issue — the 14 cents per kilowatt or 12 to 14 cents that you speak of. When you look at the business case for the biomass plant, you're making the assumption on the cost of putting the plant based on an interest of money loaned to you. Is there any room on your final figure of what you need from SaskPower if there was total investment of the project versus borrowing against the project? Does that make a significant difference in the overall scheme of things?

**Mr. Kutcher:** — It would make a difference. The impact wouldn't be as great as, of course, our biomass cost which is the most critical component because, as I said, biomass accounts for well more than 60 per cent of your operating costs. So regardless of how you finance it, it's a small component of your operating costs. But it will have an impact. There's no doubt.

**Mr. Belanger:** — And I need, kind of, clarification as to what percentage of impact. Like is it a 2 per cent impact or is it a 20 per cent? Even a ballpark figure would be helpful.

**Mr. Kutcher:** — Ballpark, 5 per cent.

**Mr. Belanger:** — 5 per cent.

**Mr. Kutcher:** — Ballpark.

**Mr. Belanger:** — The other question I had, since there's time, peat moss — is that one of the avenues of potential supply to this particular plant?

**Mr. Kutcher:** — I haven't done any analysis on a potential supply of that. I would say that it would work as it has some carbon in it because the combustors that are used are just a sort of moving bed combustor. So basically you could put in pretty much anything that has carbon in it and burn it. So it's a pretty flexible technology that way. So if you could get an economic supply of peat, I don't see why it couldn't be used.

**Mr. Belanger:** — The other question I have on your source of power generation . . . And the proposal is quite exciting. I really am captivated by some of the possibilities here. In terms of the duty to consult, which obviously impacts industry, First Nations are obviously working with you, and I'm hoping that Métis communities come along as well. If you have their blessing, that's a huge, huge opportunity for the company to move forward. Has that entered into your discussion in terms of the biomass proposal? Because obviously it's a big, big issue for First Nations and Métis communities.

**Mr. Kutcher:** — And we will be having those discussions with our partners with First Nations and Aboriginal communities and what the sources available are. And we'll work with them to identify the sources and how we can work with them to be a supplier of some of those sources, yes.

**Mr. Belanger:** — And my final question is in terms of the project you spoke of in Meadow Lake. With 1 being the initial discussions and 10 being the project turned on, where would you actually characterize the project status now?

**Mr. Kutcher:** — Very much closer to 1 than we are to 10. Quite preliminary at this point in time. Because I didn't want to put a tremendous amount of effort and resources into doing our feasibility plan and our business plan and put in a bunch of time and effort and money and then go to SaskPower and they say, we're not interested at 14 cents; go away. So I did not want to take those risks upfront. I wanted to have sort of some assurances that if we were to move forward . . .

And it does take a tremendous amount of resources and efforts to pull together a good feasibility plan. You know, you're looking at your siting issues, your potential supplies, everything like that, so it is a big job. And so we just didn't want to take that risk upfront without having some sort of assurances that there was some interest in actually buying our power at the end of the day.

**The Chair:** — Mr. Bradshaw.

**Mr. Bradshaw:** — Just one more quick question and this actually has to do with the plant itself. Exactly how efficient are they? Like did they have scrubbers to clean out the, I guess, particulates and everything else like that? Could you explain about the plant just a little bit.

**Mr. Kutcher:** — Yes. The technology, as I said, does meet European emission standards so there is nothing coming out of



the stack that would contravene any environmental regulations or restrictions. The plants are very clean, as I said. The one I visited in China, there was no visible smoke coming out of the facility whatsoever, so they are a very clean facility.

Of course you do have fly ash and clinkers coming out as a by-product. In China, they currently sell their fly ash to local cement facilities to be mixed in with the cement. So they do have a market for that; it's a revenue generator. The clinkers, I believe, just probably would be landfilled, but there wouldn't be any environmental concerns in regard to that.

**Mr. Bradshaw:** — The biomass that you're using then, does it have to be pre-dried? Like, I mean, you talk about wood; obviously it's going to have a certain amount of moisture in it. Does it have to be pre-dried and whatnot beforehand?

**Mr. Kutcher:** — Yes. The drier it is, of course, the more efficient your combustor will be. So in terms of things like if we're looking at green biomass, buying green biomass — tops, limbs, whatever in the forest — those will likely have to be dried down to be able to be fed into the combustor.

So hopefully some of the plant would be then designed with a drying facility to use some of the heat that comes off from combustion to actually dry the material going in. But yes, and then of course there's the related economics, because if you're buying something green in the bush, that's 50 per cent moisture coming out of the bush. You can't pay a dry price for that so that's got to be built into your economic model.

**Mr. Bradshaw:** — Okay. Thank you.

**The Chair:** — I have a couple of questions. A couple comments that you just made kind of spurred in my mind. Mr. Taylor had brought up that SaskPower had presented to us that about five and a half or six cents is our current cost.

Recently in the last week, we've seen that they're looking at over 10 years increased costs, and some that were dandied about were doubling in 10 years. And I think we saw a certain amount of resistance from the public. Is there any technology . . . I know that you had talked that biomass is one thing that your partner company in China is doing. Do you have any other technologies or link with China that would be interested in maybe providing other options for Saskatchewan?

**Mr. Kutcher:** — Absolutely. Absolutely. I mean CMEC has expertise in all areas of power generation. And in terms of China, they have linkages to all Chinese companies that build any sort of power equipment. So whether it's wind power, solar power, basically any type of power generation, CMEC has those connections and would be able to engineer a turnkey facility for any type of power.

So although I'm talking today about biomass because I see a real opportunity in Saskatchewan in terms of biomass, there would be interest in any sort of power generation out of China, for sure.

**The Chair:** — Mr. Belanger.

**Mr. Belanger:** — I just wanted to kind of warn you. Probably

in the inventory of the forest itself, you're probably looking at quite a bit of moisture in the forest product?

**Mr. Kutcher:** — Yes.

**Mr. Belanger:** — Because most everything that's dry, I already cut for my home fires.

I just want to make sure I clear this. So for \$3 million you can build a plant that would generate enough power for 3,000 households, using biomass. The big question is the security of the supply and of course in terms of your wood needs, and the deal from SaskPower. Is that a correct assumption?

**Mr. Kutcher:** — Correct.

**Mr. Belanger:** — So if you want to make three plants and power 9,000 homes, you're looking at \$9 million?

**Mr. Kutcher:** — No. Sorry, we're looking at 3 million a meg, so if you're looking at a 2 by 3 meg, which is 6 meg, six times three is 18 million for that plant. You do three of those plants, you're looking at 54 million.

**Mr. Belanger:** — Okay, it's per meg then; it's not per plant.

**Mr. Kutcher:** — Per meg, per megawatt.

**Mr. Belanger:** — Okay, sorry. I wanted to clarify that. And again on the actual waste coming out, I guess I'm assuming it's a stack, right?

**Mr. Kutcher:** — Yes.

[10:45]

**Mr. Belanger:** — And the actual waste coming out, there's no waste heat coming out of that?

**Mr. Kutcher:** — There is heat. Yes. Absolutely. Of course.

**Mr. Belanger:** — Is there quite a bit of heat?

**Mr. Kutcher:** — Yes. And of course, depending on the size of your facility, the more megawatts you're producing, the more heat you're going to have. But absolutely there's heat. And so there's opportunity to have synergies with local businesses that might want heat.

**Mr. Belanger:** — Like a greenhouse.

**Mr. Kutcher:** — Absolutely.

**Mr. Belanger:** — Or a series of other potential projects.

**Mr. Kutcher:** — Heat and lumber drying. Yes.

**Mr. Belanger:** — Right. And again have you had any discussions with any particular communities in our region of northern Saskatchewan like La Ronge, La Loche, Buffalo, Ile-a-la-Crosse, Sandy Bay? Has there been any discussion with any of the non-First Nations groups at all?

**Mr. Kutcher:** — Not as of yet. But like I say, before we got too deep into this, we wanted to see that there was some interest from SaskPower, a real opportunity to pursue this before, you know, beginning all the discussions that we can across the province and getting everybody excited and then, at the end of the day, we don't have a project because there's no interest.

**Mr. Belanger:** — The other question that I had is, if you look at the operations now in forestry because Meadow Lake has an FMA [forest management agreement], Prince Albert has an FMA, a number of Indian bands have FMAs, a number of Métis communities have TSLs [term supply licence], and there's some activity in certain FMAs. And the big question that we have is, well if the forestry industry's hurting so bad, is that current activity being subsidizing? Or is it just simply keeping the mills open?

Have you looked at that particular operation to see whether you could actually make the transition from the very skeleton crew that's operating now — barely — keeping the mills alive versus using some of the FMAs to power your plant? Has any of that discussion been looked at as opposed to just using waste wood?

**Mr. Kutcher:** — We will probably look at that when we look at the computer model and see what's available in terms of waste, but what might be available in terms of just using those FMAs to supply what would normally go to wood or lumber facility. So we would probably look at that. How economic it would be I don't know at this time, but it would probably be fairly expensive.

**Mr. Belanger:** — Thank you.

**The Chair:** — Well thank you very much for your presentation this morning and answering the questions for us. And we'll take it under advisement.

**Mr. Kutcher:** — Good. Thank you.

**The Chair:** — The committee will now recess until 12.

[The committee recessed for a period of time.]

**The Chair:** — Good afternoon. I welcome everyone back to the Standing Committee on Crown and Central Agencies. Today is the third day of committee's inquiry into Saskatchewan's energy needs. I'm Tim McMillan, Chair of the committee. I would like to introduce the other members again for the new guests. We've got Mr. Weekes, Mr. Allchurch, Mr. Bradshaw, Mr. Hickie, Mr. Belanger, Mr. Wotherspoon, and Mr. Taylor.

All the committee's public documents and other information pertaining to this inquiry are posted daily to the committee's website. The committee's website can be addressed by going to the Legislative Assembly of Saskatchewan's website at [www.legassembly.sk.ca](http://www.legassembly.sk.ca) under What's New and clicking on the link to the Standing Committee on Crown and Central Agencies. The hearing 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. The meeting will also be available live on this website with past proceedings archived on the website as well.

Before we hear from our witness, I would like to ask witnesses for their presentations. I'll be asking the witness to introduce himself and anyone else that may be presenting with them. Please state your name and if applicable the position of the organization you are representing. If you have a written submission, please advise that you would like to table the 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: how should the government best meet the growing energy needs of the province in a manner that is safe, reliable, environmentally sustainable while meeting the current and expected federal environmental standards and regulations and maintaining a focus on the affordability for Saskatchewan residents today and into the future?

Each presentation should be limited to 15 minutes, and there will be 10 minutes set aside for questions after. With some time permitting and questions from the committee, that may be extended.

I will then ask you to proceed with your presentation. Once your presentation is complete, the committee members may have questions for you. I will direct the 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. Our agenda allows for a prescribed time period for each presentation which will include both presentation and question-and-answer afterwards.

I would also like to remind witnesses that any written submission presentations to the committee will become public documents and will be posted to the committee's website. I would now ask this afternoon's presenter to please introduce himself and lead off with his presentation.

#### **Presenter: Pembina Institute**

**Mr. Weis:** — Thank you. My name is Tim Weis. I am the director of renewable energy and energy efficiency policy at the Pembina Institute. I appreciate you having me here. And I would like to table my PowerPoint presentation that I'm about to give as well as the document called *Greening the Grid*, looking at renewable power options which is specific to Alberta, but I think in a lot of ways which I'm going to talk about today, it's also very appropriate in Saskatchewan.

So what I'd like to talk about today is a little bit about what renewable power is going on globally and how it should be considered in Saskatchewan going forward.

The Pembina Institute is an environmental think tank which is focused on sustainable energy solutions. We've got seven offices across Canada. I'm currently based in Ottawa; I direct our renewable energy program there. I'm a professional engineer. I've got a background in mechanical engineering. I did a master's looking at ice on wind turbine planes in the high Arctic and am doing a PhD in research looking at remote community wind integration. All of our publications are available online for you to download.

One thing I think is fairly unique about the Pembina Institute is that we also have done a lot of groundwork working with communities and working with corporations in terms of looking at what policies work for those communities, but also looking on the ground. And these are some pictures on the screen of communities I have worked with installing wind energy equipment and installing hydro equipment, in terms of finding out what is appropriate for that community and their opportunities.

We have also had some problems in understanding what difficulties can go on with some of these projects. So we have a good understanding I think on the ground of what's possible and what some of the difficulties are.

These are a list of the different communities we've worked with, including several communities in Saskatchewan.

So I'm going to talk a little bit today quickly about climate change and the implications of that for electricity in Saskatchewan, what's going on globally around the topic of renewable energy, specifically focus a little bit on the *Green Energy Act* which has recently come into force in Ontario, and then talk about what options there are for Saskatchewan.

I think it's important to start off with understanding that most of the scientific models for climate change have all been under-predictions, the worst-case scenarios have all been under-predictions of what we're actually already seeing globally. And so I think that's an important point to start, and the reason that's important is because we're very likely going to see some abatement measures in the very near future. And looking at one of the big issues we're going to be seeing is a carbon price. Whether that's coming from the United States with the Waxman-Markey Bill, or whether that comes directly from legislation here in Canada still remains to be seen.

But there's a range of different prices that we might be looking at. The American system is looking at about \$20 a carbon by the year 2020. Total oil in the oil sands in Alberta is planning for a carbon price of about \$40 per tonne in their economics. And in the turning the corner documents that the Harper government has laid out, they're estimating up to about \$65 per tonne of carbon. And then carbon capture and storage technologies are forecast to be anywhere between 75 to \$150 a tonne of carbon dioxide. That's going to have very serious implications for coal-generated electricity in Saskatchewan and very serious implications for the prices of being very reliant on coal.

Where we are in Canada right now is about 75 per cent of the power comes from non-emitting sources, but about 25 per cent of the power in Canada comes from coal and from natural gas. And that's definitely the case in Saskatchewan in that top, right-hand corner. That's where the Saskatchewan grid falls.

In fact if you look at where the majority of the electricity emissions come from across Canada, you can see that Alberta is the largest source of electricity emissions followed by Ontario and Saskatchewan being the third-largest source of emissions from electricity. That's about to change because Ontario has committed to phasing out all of its coal power in the next four years. And they've already started that process, so that will

leave Saskatchewan as the second-largest emitter of greenhouse gas emissions from its electricity sector. On a per capita basis, Saskatchewan actually has the highest rate of greenhouse gas emissions per capita.

One interesting thing about Canada is the grids generally are not well interconnected with one another, but there are some similarities I think in some of the different systems. And I think Saskatchewan probably has what I would call two sister provinces in terms of where it gets its power from. You can see on the left-hand side there, about 60 per cent of the power in Saskatchewan comes from coal and another 15 per cent from natural gas.

Alberta and Nova Scotia in some ways are similar. Although Alberta's about three times the size and Nova Scotia's roughly half the size, they both have a large coal base. And so I think those are two interesting provinces that Saskatchewan should be looking at in terms of what can be done.

To what's going on globally, the renewable energy is currently is at a massive economic boom. You can see on that graph this is the number of dollars that were invested in the industry. Even in 2005, this industry has grown rapidly in the last five years. In the year 2008, we saw more investment in renewable power than in coal, natural gas, and nuclear combined. It was a \$140 billion industry. That's expected to grow in 2009. It's expected to be a record year for renewable power. Those are the UN [United Nations] numbers that suggested that renewable power was the largest source of investment. Again it's a \$140 billion industry.

Wind energy alone is expected to be a trillion dollar industry in about 10 years time from now. There're 85,000 people in the United States employed directly in wind energy, 70,000 people in Germany, and 4,500 in Canada. To put that into perspective, there's 80,000 coal miners in the United States. So wind energy currently employs more people than the coal mining industry in the United States.

The North American Electric Reliability Corporation forecasts over the next 10 years — this is an organization whose job it is to keep the electric system in North America reliable, keep the lights on effectively — what they're forecasting in their models is over the next 10 years, you'll see 145,000 megawatts of new wind resources developed and about 9,000 megawatts of nuclear power. So it's important to put into context where the large development is going to happen.

That was a forecast that was made prior to President Obama's election. And I think it's important to look at what President Obama has done. This is a quote of his:

Think of what's happening in countries like Spain, Germany, and Japan, where they're making real investments in renewable power. They're surging ahead of us and poised to take the lead in these new industries . . .

It's because their governments have harnessed the people's hard work and ingenuity with bold investments . . . that are paying off in jobs that they won't lose to other countries. There's no reason to think we can't do the same thing here in America.

And I think President Obama has put his money where his mouth is in investing close to \$90 billion in the America stimulus package into renewable power. I think Canada needs to take that very seriously in understanding what is going on with our largest trading partner who is taking renewable power and energy efficiency very, very seriously.

So when we talk about renewable power, I talked a little about wind power. I think it's important to remember that there's all sorts of different technologies that are out there. So there's obviously energy efficiency is something that needs to be considered very seriously. There's wind power. There's hydro, solar, looking at cogeneration, sources of biomass — whether it's from the wood, whether it's from farm waste, whether it's from biogas on feed lots — these are all different technologies that are out there. And it's important to look at these types of technologies in concert with one another, and not necessarily as being independent of each other, but how they can be used together.

I'm not going to go through those different technologies, but the report that we've written — it's available on our web page — and the summary which I've handed out today goes through how you could go through how you could use those different technologies, and in the Alberta context, where I lived for the last 10 years, how you could use a mixture of those different technologies to meet Alberta's projected energy gap, which right now is projected at almost twice the current demand over the next 20 years.

So what we looked at is how you could meet that gap with those renewable power sources without adding any new coal or without any nuclear power to the Alberta system. We found out that it is technically possible to do that in Alberta. And in fact if you really wanted to ramp up a mixture of those different technologies, you could actually start phasing out coal power in Alberta starting today if the government of Alberta so chose. I think that's important for the Government of Saskatchewan because in some ways the power systems are very similar in some ways. And I think if it's possible in Alberta, it's something that definitely should be put on the table and seriously considered in Saskatchewan.

The three ways to get there in Alberta are to really ramp up energy efficiency — to really take that very seriously — make major commitments to wind power and look at the options for combined heat and power to really provide a much larger source of power in the province.

We've also looked at Ontario. And Ontario is facing a different problem than Alberta, but in some ways the same problem in that they have an energy gap going forward because their nuclear power plants are coming to the end of their lives. And so we ran a similar analysis in Ontario and found that they could phase out the Bruce Power plant B and the Pickering-B, both of which are coming to the end of their natural lives. And you could do that without building any new nuclear plants — again meeting with largely wind power, combined heat and power, and energy conservation.

But you can't get there without aggressive targets, and you can't get there without government leadership. And Germany I think is a very good example of where you're seeing serious

leadership. They'd set targets for twelve and a half per cent renewable power by the year 2010. They're already at 15 per cent. By the year 2008, they'd exceeded their targets. They're looking at 80 per cent renewable power by the turn of the century.

Those type of targets are very aggressive. And in the utility world, those are decisions you have to start making today if you want to be . . . It takes 30 and 40 years sometimes to turn over utility-scale equipment. And so if you want to have goals like that, these are decisions that need to be made today, whether that's in Germany or that's in Saskatchewan.

[12:15]

Germany is the example that many, many people will point to because they have been very successful in employing renewable energy very quickly. They have over 250,000 people employed in the renewable energy industry right now.

In terms of how much renewable power you can put onto the grid, Denmark is the leader in terms of actual wind power penetration with almost one-fifth of their power, 20 per cent of their power, coming from wind energy alone. Spain is up to 11 per cent on average. And on a very windy day in Spain, 40 per cent of their power can come from the wind.

Another important thing to look at is what happened in Ontario, is the cost of nuclear power. And when Ontario did its original forecasts for the IPSP [integrated power system plan] — the integrated power plan — they had originally forecast nuclear to be about \$3,000 per kilowatt. And the most aggressive, the highest prediction in terms of what the power cost for nuclear power might be, was on the right-hand side there done by Moody's investment. A couple of months ago, it turns out that the actual cost of nuclear power was about three times what they'd originally forecast it to be. And that forced the Ontario government to indefinitely put on hold their plans for refurbishing nuclear power in the province.

So there are some important things that have happened in Canada that I think it's important to be aware of. One is that Ontario's planning on phasing out all of its coal by the year 2014. They've put their nuclear expansion or recommissioning on hold.

Alberta has announced a new transmission, up to 3000 megawatts, that can accommodate up to 3000 megawatts of new wind power in southern Alberta with probably another 1000 megawatts that can come onto the Alberta system onto the existing grid. Nova Scotia has announced 25 per cent of its power to come from renewables by the year 2025 with the potential to move that to 40 per cent by the year 2020. Again Nova Scotia . . . And these are the other provinces that have large coal dependencies. And so I think from a Saskatchewan point of view, it's important to look at what's going on in these provinces.

I want to focus a little bit on Ontario's *Green Energy Act* because it's arguably Canada's most aggressive renewable energy law, arguably the most progressive renewable energy law ever passed in North America. It guarantees contracts for anyone who wants to build renewable power systems and put

them onto the grid. It does so based on what's going to be profitable — on how individuals, communities, and co-ops and farmers can get onto the grid and make a profit in doing so.

In fact the Ontario government is giving bonuses for First Nations, for farmers, and for community powers. And for co-ops, they get premium rates to be able to put whether it's wind power, solar power onto the grid. They've also announced new transmission to be able to accommodate that. And if you want to find out more about their web page, this is the law that was passed into effect two weeks ago, and it was officially announced at the Canadian Wind Energy Association conference in Toronto. An important aspect of the *Green Energy Act* is it's very much based on what's gone in Europe. It's very much based on the German experience and the Danish experience, where there's no subsidies that come from the government. Rather the costs of implementing some of these premiums are passed on to consumers, and so it doesn't come out of annual budgets.

The Ontario Power Authority is expecting a 1 per cent increase on power prices for the next 10 years in order to implement this aggressive *Green Energy Act*. There's no cap on how much renewable energy can be put onto the grid, and there's also a focus on efficiency to make sure that some of those cost increases are going to be mitigated. The Ontario government is expecting 50,000 new jobs to come as a result of this.

This is from an investment firm that I read yesterday, that came out on October 5. And it says:

Ontario officially launched the feed-in tariff aiming to boost renewable generation and significantly improve their transmission grid in the process. The development of a feed-in tariff, or a FIT, in Ontario is a major event that could transform both renewable power investment and technology in Canada, shifting the development and focus eastward.

And I think that's important for Western provinces to understand what's going on in Ontario and the amount of investment that's going to go on there. These are examples of farms that are near my hometown of Waterloo, of farmers seeing wind power as a new cash crop that they can count on. And this is really going to be facilitated by the *Green Energy Act* in Ontario. And I think it's definitely something Saskatchewan could consider.

In terms of what can and can't be done, I think it's important when we looked at what Denmark had done just to see some of what they were up against when they originally had . . . I know this is a little bit hard to read. This is testimony from the electric system operator in Denmark and what they said to their government. They said:

We said the electricity system could not function if the wind power increased beyond 500 megawatts, but now we're handling five times that much power. And I would like to tell the government that we are ready to handle even more, but it requires the right tools to be able to do so.

And so there is often resistance, and it often takes time for

utilities and for good operators to understand how to integrate these amounts of renewables. But I think Denmark is a shining example of how you can overcome some of these obstacles.

This is what Denmark looked like 20 years ago or 30 years ago in terms of seeing large centralized plants, and where the country has moved to in about 25 years. Between the years 1996 and 2006, it increased their wind power to about 20 per cent of the national grid and reduced their greenhouse gas emissions by about one-third. At the same time, Denmark's economy grew by 45 per cent.

So to sum up, renewable power is a booming industry globally. Clean solutions are possible. We're seeing countries implement these, but it really takes government leadership for these sorts of things to happen. And I think Saskatchewan has a huge opportunity to take advantage of what's going on globally. There's a large land mass. It's got a fantastic wind resource, and there's large opportunities to export clean power, whether it's to the United States or whether it's to Alberta.

In order to capitalize on this investment, one of things that Saskatchewan should seriously consider is looking at mapping its renewable resources, whether it's getting a detailed wind map; understanding what biomass resources it might have at its disposal, whether that's biogas from feedlots, whether that's waste stocks from wheat; whether that's additional hydro, run-of-river hydro; undertake a serious wind forecasting study, which is what's been done in Alberta.

Alberta originally thought they couldn't handle more than 900 megawatts of wind power. The Alberta electric system operator has undertaken a serious forecasting study, and they've lifted the cap on wind power in Alberta. And they're expecting to be able to integrate up to five times more, what they originally thought was impossible.

I know there's been a grid integration study done in Saskatchewan, I think by Genivar. It's important to look at what that grid integration study said and what strategic upgrades would be required to the transmission grid in order to increase the capacity for renewables.

If you're going to be considering other options, make sure that renewables are put on the table. Given what's going on globally, given what's going on in Canada, I think renewables ought to be considered at least equally in terms of what other options are on the table. Make sure you're recognizing the environmental benefits of renewables as well. Ontario has set a very high bar for the province and for the country, but I think Saskatchewan has the opportunity to jump over it, if it so chose.

I'd like to sum up by saying the renewable energy revolution has begun, and I hope Saskatchewan will be leading it. I appreciate your time.

**The Chair:** — Great. Well thank you very much for your presentation. We now have a few questions. Mr. Hickie.

**Mr. Hickie:** — Thank you, Mr. Chair. And thank you for the great presentation. I have just a couple of questions. We'll start with wind power. What did you find from your research on the climate and the adverse effects on the turbines? Is it dangerous

because we have a pretty adverse climate in Saskatchewan? And yesterday we talked about the Alberta clippers are being utilized to develop wind power, but of course we see that their temperature ranges are much lower than ours — or higher, I guess — than the big picture. We deal with 50-below wind chills. So can you shed some light on that for us please?

**Mr. Weis:** — A couple of things. The wind chill isn't relevant I guess in terms of what, in terms of how cold the temperature the turbines can handle. It's more the absolute temperature is because it has to do with when steel actually transitions from plastic to brittle.

Typically when turbines operate down to about minus 30 — absolute temperature, not without wind chill — but you can get cold weather packages that have been operated down to minus 40. There is currently two wind turbines operating in the Yukon — been operating for 15 years, the first one. There is four large-scale wind turbines operating in Antarctica right now, and there's about 20 wind turbines operating in Alaska. So clearly it can be done in cold climates.

**Mr. Hickie:** — Thank you. I guess just to go from that point then, is what do these other countries and I guess in Canada, the ones that utilize the wind power, what do they use for backup most generally?

**Mr. Weis:** — There's all sorts of different things you can be doing. And I think what's important to remember is that some things you can be doing with wind power, for example . . .

Or well I guess the first point I want to make is when we're talking about renewable power, it's not just wind only. There's all sorts of other options you can be integrating. One of the things you can be doing is spreading out the wind turbines geographically throughout the province. And I think that was one of the recommendations in the Genivar report on the grid integration was if you want to reduce some of the fluctuations, it actually helps spread them out. And I think that's what Ontario's looking to do with their *Green Energy Act* is to make sure you're getting more decentralized power, as opposed to having really, really large wind farms. If you can have them spread out in farms and First Nations and communities, then where it's windy in one part of the province, it may be less windy in another part. It helps sort of balance that.

In terms of actually balancing the power, natural gas is something that's often used. Hydro is often used. Quebec is using . . . Quebec has one of the most aggressive targets for wind power in Canada. And they're doing so with a surplus of hydro right now, and the reason is because they can store the power effectively in their hydro dams and then sell it at peak rates. So there's lots of ways that you can use to balance wind power, balance variability.

**Mr. Hickie:** — Thank you. And I guess the issue I want to ask next about power, wind power forecasting. SaskPower was here a couple of days ago and they talked about their agency. Their experts are doing that. Have they ever engaged you for that kind of a study?

**Mr. Weis:** — No. We wouldn't be the right organization to undertake that type of study.

**Mr. Hickie:** — Okay. Hydro is another one that they talked about. They told us — and I'm not sure if you have the answer to this or not to verify their data — but they looked at Manitoba, and we asked about that specifically, and they told us there is no surplus hydro from Manitoba available till 2020. And we know Manitoba exports quite a bit of their power hydro-wise to the States. Could you shed a light on that for us at all with any of your studies?

**Mr. Weis:** — We haven't looked at Manitoba specifically. I mean one thing you could be doing theoretically would be if you were to ramp up wind power for example in Saskatchewan, Manitoba could then use that and use its hydro effectively as a battery. So you could actually create surplus hydro in Manitoba. So that would be one option of actually creating that surplus hydro, and then you could be able to buy and sell back. That's certainly what Denmark and Sweden do. They're really well integrated. Sweden has large hydro reservoirs, and Denmark has fantastic wind regimes, and they buy and sell power with each other all the time.

**Mr. Hickie:** — Thank you.

**The Chair:** — Mr. Belanger.

**Mr. Belanger:** — Just in terms of obviously the people of Saskatchewan, and generally people of the country and right across the globe, are really asking for leadership on the whole notion of trying to address climate change and thus create new sources of power for people to consume. And so thanks for all the information. But my question, when you talk about Germany itself — and please don't misinterpret; I'm just being a devil's advocate here — but Germany itself, in terms of the objectives they have and so on and so forth, are the German power bills going up as a result of some of their measures that they've taken? And how much have they gone up?

**Mr. Weis:** — I'll answer that directly, and then I'll answer indirectly. The German power bills, it does cost a premium to put some of these technologies on. And I think that's, you know, I think you get what you pay for at the end of the day. If you want to increase clean power, then you have to pay a little bit for it to make it happen.

I think another important point to recognize though is that power prices are going to go up regardless. And I think that was made clear by SaskPower, that even without renewable power, we're looking at price increases across the board across Canada because a lot of our aging infrastructure is going to need to be rebuilt in one shape or another. So power prices are going up, and I think that's an important starting point.

The other question then is the point that I made earlier, is when you start talking about a carbon price, what type of exposure are the people of Saskatchewan going to be subjected to if we don't implement clean power? I think that's another important point you need to be thinking about.

But to address your question directly, the German success to date has resulted in about a \$4 a month increase on the average power bill in Germany. It's in euros, but the equivalent is about \$4 a month. In Ontario they're expecting a 1 per cent increase as a result of their similar law to Germany.

Definitely it's a little bit more, but I would submit that it's (a) hedging your bets against increase in price from other sources; and (b) I think it's worth it in terms of abating the climate change concerns.

**Mr. Belanger:** — So you're asserting here today that, based on the fact that we do have to have an increase in power and the carbon price going up, that people are going to end up paying for it anyways, so we should make the move to some of the other models that are working throughout the world, as is the case in Germany. That's your assertion in terms of we're going to spend it, so let's spend it intelligently and wisely on the renewable sector. Is that correct?

**Mr. Weis:** — Obviously this is a decision for Saskatchewan, but I think it needs to be put on the table — looking at what opportunities are out there and looking at what other jurisdictions have done and understanding what is the best option for the province going forward in terms of sustainability, in terms of the environment, in terms of the best way.

And the other issue is, how quickly can you get this power into the ground? And I think those are things that need to be seriously considered.

**Mr. Belanger:** — Two other questions. I'm just curious — don't misinterpret this as well — but where does the Pembina Institute get their funding from?

[12:30]

**Mr. Weis:** — It's on our web page, our most recent report. We're funded by a variety of different sources. We get foundation support. We get individual donors, and we do direct consulting for groups as well — fee-for-service consulting.

**Mr. Belanger:** — And my last question is that I noticed in the map that you showed of Denmark that the power generation services were radically decentralized. Does this help . . . Like an example, I'm from northern Saskatchewan so we transport the power, I'm assuming, from Saskatoon or from further south. I'm not sure the actual grid. But when we transfer that power, there's a line loss and some experts predict that line loss anywhere from 10 to 15 per cent. When you decentralize — not those experts, but real experts — when we decentralize your power supply system, does that address the 10 to 15 per cent line loss? Is that part of the efficiency that you speak of?

**Mr. Weis:** — When I was talking about efficiency, that's not what I was talking about. The efficiencies that I was talking about was actual demand-side management and conservation, but definitely decentralized power will have that effect of . . . Any time you're putting the source closer to the load, you are going to have a whole lot less line losses.

In Saskatchewan my understanding is there is the hydro in the North actually runs through Manitoba and then back to the south of the province. So that's probably where you're getting your power from, would be the hydro up north.

But, yes, the numbers are about 10 per cent in terms of power loss through transmission. And so you can mitigate some of that through distributed transmission, and that's definitely one of the

bonuses of things like rooftop solar for example or community scale power. Having said all that, there will be a role for centralized power whether it's large wind farms, whether it's large hydro, whether it's coal with carbon capture and storage. I think it's going to be difficult to get away from that entirely so it's going to be a mix of both. But definitely decentralized power reduces those line losses.

**Mr. Belanger:** — Thank you.

**The Chair:** — Mr. Weekes.

**Mr. Weekes:** — Thank you, Mr. Chair. Thank you for your presentation. It's very interesting, raises many issues. If I may, I just want to go back to some of that has been already raised, but I just want to go at it from a different angle.

First thing on the windmills, one of the presenters said concerning cold temperatures, they said, well the new technology developed by the French handles colder temperatures. You're doing research in the Antarctic; I believe you had mentioned this. Is French technology more advanced than others? I guess I'm asking you what he meant by that because there was just . . .

**Mr. Weis:** — I can't comment on that. The turbines that are in Antarctica are German. The turbines that are in the Yukon are Danish.

**Mr. Weekes:** — Just moving on to wind power as a mix in our production of energy. Now specifically, if you can answer this specifically for Saskatchewan — or I think you mentioned that maybe you're not the expert on Saskatchewan — but Western Canada or Alberta, what percentage number can we expect, excluding the cost? Let's just take the cost out of it. What percentage can we target to be the mix in electrical generation? Because the obvious concern is the wind doesn't blow all the time. Do you have an idea of what's the maximum amount we could produce?

**Mr. Weis:** — By and large, I mean Denmark is already at about 20 per cent, and a lot of people think that about 20 per cent is where you can be getting wind to without serious upgrades or serious changes to transmission systems. You can definitely go higher than that. There isn't really a limit.

The question is you would just have to change the grid system a little bit — looking at demand-side management, looking at smart grids that can dynamically move loads around, which is what they're doing already in Vermont for example, potentially looking at power storage. There's some power storage facilities already under construction in Germany, and there's some power storage projects under consideration in Nova Scotia. So if you start looking at options like that, you could really start ramping up the rates higher and higher.

There's remote communities — there's one in Alaska, a remote community — that can run 100 per cent on the wind, and it shuts off the generators. So at a small scale it definitely can be done. Technically there's no reason you couldn't ultimately have 100 per cent wind power. It's really a question of what . . . It becomes an economics question at some point in time, but technically, there's no real limit.

**Mr. Weekes:** — Because as you mentioned, you know, jurisdictions have a lot of hydro. I mean, that works very well together. I know speaking to Western USA [United States of America] legislators, Oregon and Washington in particular, I mean, it seems to work really well, hydro and wind power. But here in Saskatchewan, where we have to worry about the baseload with, right now, coal or natural gas, it's a different issue.

If I could try to get a number out of you — I know you answered this somewhat — we've had various numbers thrown at us about the future costs of electricity production. Do you have an estimate of where that price is going to go in Saskatchewan, or at least in Western Canada, from your research?

**Mr. Weis:** — In terms of what the current price in Saskatchewan is going to be?

**Mr. Weekes:** — I guess what I'm asking about, what the rates are going to be to the consumer. What kind of number do you feel we should be looking at as far as rate increases to cover the new technologies and growth and replace our aging infrastructure?

**Mr. Weis:** — That's probably a better question for SaskPower in terms of what they expect the rate prices to be going forward. In terms of what they should be, I think that's a tough question to answer. Obviously you want to be keeping power prices as low as you possibly can, and one of the best ways to do that is to invest seriously in demand-side management and energy efficiency to shelter against whatever increases may be coming.

But it's difficult to predict what world prices are going to be because I think the one big question really is, what is the carbon price going to be, and what is the price of carbon capture and storage going to be? And those are two big unknowns at this stage in the game, and they'll have big implications in Saskatchewan.

**Mr. Weekes:** — Just a follow-up on that. You talked about costs in other countries. I suspect every jurisdiction is looking at increasing costs of power electricity regardless of where they are, just depending on the different balance of production, I suspect.

**Mr. Weis:** — Yes, by and large the corporate costs are going up. And one of the advantages of wind power or renewable power is that you're hedging your bets. You know, once you've put a wind turbine in or a solar system in, you may be paying a premium, but the price of wind never increases. And so you're hedging some of your price. You're sheltering, I guess, long-term increases because you're not relying on a power supply that requires fuel that may increase.

**Mr. Weekes:** — If I may, just one more. Nuclear power — what is your position on nuclear power and the future of it in Western Canada?

**Mr. Weis:** — We don't have a position one way or the other on nuclear power. I think there's a couple of things you need to consider when you're looking at nuclear power. One is what the costs are going to be, obviously. How quickly you can actually

get into the ground, that's certainly been a difficulty. And we're seeing in Europe that the timelines are much longer — typically at least 10 years. And I think if we're looking seriously at climate change action and taking action in the very near future, we need technology that we can put into the ground right away in the next few years.

And so from those two points of view, I think nuclear is at a disadvantage. And if we're going to be considering nuclear, I think we need to be considering all of the spectrum of technologies that are out there and weighing them against each other. But that would be our position on nuclear power.

**Mr. Weekes:** — Thank you very much ... [inaudible interjection] ... Sorry?

**Mr. Weis:** — I say it's up to each jurisdiction to make its own decision, is our official position here.

**Mr. Weekes:** — Thank you.

**The Chair:** — Mr. Wotherspoon.

**Mr. Wotherspoon:** — Thank you. Thank you for the information here today. Specifically on demand-side management — DSM — in conservation, I'm interested if you could point us to some jurisdictions or utilities or experts that you think would be worthwhile for us to engage and learn from through this process. Because it would seem that with huge growth in industrial power needs in this province that there's a lot of room for efficiencies. And what the role for government is, I think, on that is of question, as well on the residential side.

But would you be able to point us, I guess, to specific programs that have been implemented around the world or in other jurisdictions, or specific experts that we should be engaging with?

**Mr. Weis:** — Yes. There's all sorts of examples out there, in North America in particular. Vermont has been a leader. Texas has actually been a leader, and California. Nova Scotia has some pretty aggressive programs.

We have a publication which I'd be happy to table or to submit. It's called *Successful Strategies in Energy Efficiency* which looks at the different jurisdictions across North America and which ones have been the most successful. That would probably be the best resource to consider.

**Mr. Wotherspoon:** — You could table that to this committee?

**Mr. Weis:** — I'd be happy to.

**Mr. Wotherspoon:** — We hear the assertion ... It wasn't long ago that we heard here in Saskatchewan that the largest mix of wind that we could have in this province was 5 per cent. Now we're hearing that there's constraints around 8 per cent. Yet we know other jurisdictions and utilities around the world are moving this line far above that — Minnesota, above 10 per cent; Iowa, above 13; Denmark, as you mentioned, 20 per cent.

Would you cite specific individuals that we should be bringing before this committee, or specific organizations or industry that



we should be engaging with, to talk about how that mix is working for them.

**Mr. Weis:** — I think one of the best people to talk to would be the Alberta Electric System Operator because they went through some of the same issues. They originally had put a 900-megawatt cap or threshold, I guess, on wind energy development in the province, citing that beyond that it would be too difficult to integrate any more. Subsequently did a number of integration studies, and have done some of Canada's leading forecasting analyses, and have actually lifted that cap and are planning on integrating . . . As I said, the transmission upgrades in southern Alberta are capable of handling 3000 megawatts of wind power. So the original cap was 900. After having done these studies, they're looking at over three times that. So I think they'd be a very good group to talk to.

Also I would look at the Ontario Independent Electricity System Operator — the IESO — who are going to be dealing with all sorts of new development across the province of Ontario. Granted the Ontario transmission system is very different than the Saskatchewan one, and I think Alberta's is a little more of a sister transmission system, but definitely worth talking to them because a lot of the same issues, for sure, in terms of ramp rates and curtailing the loads and those sorts of things.

**Mr. Wotherspoon:** — Thank you.

**The Chair:** — I have a couple questions. I guess when SaskPower presented to us, they said that they had done a study looking at wind. And what you had said today is that by distributing your wind wider was an advantage, where SaskPower said they had looked at that exact issue and their team said that in fact clustering them together was bigger. Is that a debate that's out there? Is there some jurisdictions doing it one way or the other? I'm just trying to fit the two together.

**Mr. Weis:** — I can't really comment on SaskPower's position without knowing exactly what they said. I mean it may be a question of whether it's from an economic point of view or from a power smoothing point of view.

I think from a power smoothing point of view, it's pretty clear that distributing the turbines around reduces fluctuations — I think that's pretty well known — to what extent is definitely different in Canada than it is in Europe. We tend to see more uniform weather patterns in Canada than they do in Europe, and so we don't see quite the same advantages in Europe of distributing the turbines that they do. So we don't see quite the same advantage in Canada as they do in Europe because we tend to have larger air masses that move through the Prairies. You see similar weather systems that move through large areas.

In terms from an economic point of view, it probably is a little bit more cost-effective to build large plants. I mean that tends to be . . . there's economies of scale and those sorts of things. That may be the approach they are coming from, but I can't comment exactly on what they had said.

**The Chair:** — Okay. That very well might be. The economics of it are different than the structure, what's good for smoothing.

My next couple of questions are . . . I've got a list of the feed-in tariff of Ontario. Earlier you were asked, what has it added thus far to the Ontario bills? And I see the feed-in tariff for certain amounts of solar PV [photovoltaic] is as much as 82 cents a kilowatt hour. If this program becomes very popular over the next 20 years and a large portion of people are selling PV power at 82 cents a kilowatt hour, is there an expectation that the consumer in Ontario is, you know, the more of this that comes online, the higher the price will get incrementally?

**Mr. Weis:** — Yes, clearly there is bit of sticker shock with those types of rates, and there's a couple of things that need to be considered there. One is that (a) they're trying to grow the market to ultimately bring that price of power down. In Ontario there is a two-year review of the feed-in tariff rates and they should . . . What they do in Europe is they incrementally decrease every year as the price of power of those technologies decreases.

[12:45]

Another important point to recognize is that in Ontario in particular there's a summer electrical peak, and solar power generates on peak all the time, particularly in the summer. So on the hottest, sunniest days you're going to have the most air conditioners running. And so you're not competing against the average price of power, but you're actually competing against what the peak price of power is which is actually much more than the average price. And so it's not to say it's 80 cents, but the difference isn't quite what it would seem.

The other issue is, yes, these prices are more than we're paying right now. There's no doubt about that, but I think you also need to recognize how quickly you're phasing these things in. I mean solar, at the end of the day, we're going to be lucky to be seeing, you know, 1 per cent, 2 per cent of Ontario's power supply coming from solar in the next four to five years. So you know, you're paying a premium for a very small portion of the electricity. So there is a premium. It is going to help meet peak demands, and it really is aimed at creating an industry and shaving peaks and helping create efficiencies.

And so you put all those sorts of things together, and that's why the price is set where it is. But it is meant to be reviewed every two years and declining every two years.

**The Chair:** — Okay. One thought that just jumped into mind with that answer is Ontario's peak is in the summer. We were shown our peak is in the coldest part of the winter, and there is a summer peak as well. I tell my constituents that there's no silver bullet here, that power is probably going to cost more into the future with climate change legislation and everything. Just on the off chance there is a silver bullet, is there any technology that performs extremely well at night in 40 below, in terms of an ice generation that's cutting-edge? No?

**Mr. Weis:** — No. And I think it does speak to the point that you do need a mix of technologies out there. I mean this isn't something that solar is going to meet on its own; it's not something that wind's going to meet on its own. We do need to be considering, you know, a gamut of options that are out there, or maybe even adding power storage on to the system. And so there is no silver bullet — it's more of a silver buckshot.

**The Chair:** — Thank you. I think Ms. Morin had some questions.

**Ms. Morin:** — Thank you, Mr. Chair. Just a couple of clarifications I was looking for, more so than anything else. We have already seen through your presentation that there is some world leaders in terms of renewable energy sources, technologies, projects. Can you maybe just elaborate? I know you gave us one quick statistic; I'm wondering if you could elaborate a little bit about the employment opportunities that that has created in some of the countries that have embraced it already.

**Mr. Weis:** — Yes. I said I think Germany has a quarter million people employed in renewable power, United States 85,000 people in wind energy. Ontario is expecting about 50,000 new jobs in renewable energy through its *Green Energy Act*. Spain I think has about 60,000 people, and about 4,500 people in Canada right now. So there is large job implications with renewable energy, and there's even larger job implications with energy efficiency because that tends to be very labour intensive. And so with the extra price, there also come extra jobs as well.

**Ms. Morin:** — And how does that look in terms of the offset? I mean, clearly part of the concern is, in terms of going away from coal, that there's going to be loss of employment in the coal industry. How is that compared in some of the countries that have already embraced that, in terms of offsetting the loss of employment in the coal industry versus the gain of employment in the renewable energy industry? Do we have any statistics on that?

**Mr. Weis:** — It's still a little preliminary, I think, to be gauging. I mean it's important to point out that we're not shutting things down overnight either. It is a pretty gradual transition. I think there's been a couple of studies out, but we're only about 10 years into the serious changes in Germany and Denmark. And so I don't have any studies offhand to be able to point to, but by and large the feeling is that jobs in renewable power and energy efficiency largely outstrip large centralized energy generation.

**Ms. Morin:** — Okay. And I'm wondering if you could just give us a few ranges — I'm assuming that you probably have these in your hot little hands — about the cost per kilowatt hours for certain technologies. Maybe if you could just give us a few samples. I'm sure nuclear is something that you have, you know, the range of cost per kilowatt, and maybe some of the other technologies that you already have some statistics on. Could you give some of those ranges to us today?

**Mr. Weis:** — In some ways it's difficult to answer that question because, especially with renewable power, because it really is very site-specific and it depends on the quality of your local resource. For wind power, that's particularly true. And it also depends on how far you are away from the existing transmission system and how much money it's going to cost to connect. So those are two big questions. And the same goes for a large nuclear plant or a large coal plant if you had to build new transmission capacity.

The two questions that I certainly don't have an answer for is what the cost of nuclear power is and what the cost of carbon

capture and storage is. I think the ranges that we've seen, we held a thought leaders forum in Alberta on carbon capture and storage about two years ago, and they were talking anywhere between 75 to \$150 a tonne for carbon capture and storage. And those are the numbers that were put on the table.

The reason I don't have an answer for nuclear is because we haven't built one in Canada in 20 years, and we just don't know what it's going to cost in 2009 dollars.

The Ontario numbers they were suggesting was about \$26 billion for the two nuclear reactors in Ontario, which I think comes in somewhere on the order of 20 cents a kilowatt hour. But as I say, we haven't built one, so I don't have one that I can actually point to and say yes, that's actually what the cost is.

**Ms. Morin:** — Well thank you for your thoughtful answers to our questions. And the presentation was outstanding, so thank you very much for presenting to us here today.

**The Chair:** — Mr. Bradshaw?

**Mr. Bradshaw:** — I'll refer. I'll talk to that after.

**The Chair:** — Mr. Hickie.

**Mr. Hickie:** — Thank you. Just one quick question. We heard from, and I forget who it was yesterday or was it SaskPower the day before, that the cost of solar, the input cost to produce the panels, the batteries — I think Mr. Belanger talked about it in a question yesterday — the environmental impact on those was very long-term and that the overall effect of using those wouldn't be a cost saving to consumers. Can you comment about that?

**Mr. Weis:** — Maybe I'm not understanding your question.

**Mr. Hickie:** — The input costs for solar to develop the panels, the technology associated to the battery operations, all those things were very high in per kilowatt hours, and the overall cost to the consumers were quite high because of that. So in the end, as a renewable, it really didn't have the effect that people want to see. Is there something you can say about that?

**Mr. Weis:** — A couple of things about solar power. One is that if you look at what wind industry did in terms of sort of the massive growth in the industry in the last 15 years, solar is about 15 or 10 to 15 years behind that, but you can see it fall in the exact same trajectory. And so what's true about solar today is not going to be true about solar five years from now; it's going to be a radically different industry five years from now.

So I think that's important to keep in mind, that things are changing so fast in the solar industry, they're talking about grid parity in Europe within five years. I mean I don't know whether that's going to come true or not, but that's the projections I've heard.

You know, there are all sorts of chemicals that go into solar photovoltaics, and recycling and reusing those different types of products is definitely something the industry's taking very seriously. And I think something that people should be really taking very seriously going forward — not that they're highly

toxic, but in some ways they're rare, and we don't want to be wasting these types of chemicals. And so that's definitely something that's on the table.

But in terms of the overall cost, I think, I don't know what the life cycle numbers are, but I think it's within a few years in terms of the energy that goes in versus the energy that comes out. It's definitely life cycle net-positive by far.

Wind turbines is the one I do know offhand. It's a three-month life cycle energy recovery. So the amount of energy that goes into it, you get out within three months with operation.

**The Chair:** — Mr. Belanger.

**Mr. Belanger:** — Yes. I just wanted to clarify. You kind of lost me there because I'm just a hockey player dabbling in politics here.

But back to the question about the actual batteries. And I'll give you a good example: I buy batteries for my power drill. I charge it up, and then I have power that isn't plugged in. Now the same principle under the solar stuff — and I need to clarify this in my mind, so the question's quite important — the solar argument is that it costs just as much money to build the battery, in terms of the cost and the energy into it, as the environmental benefits of it. But I go back to my hand-held drill. The drill is built — obviously you take the cost in building that drill, and you take the cost of the base to charge up that drill, and all those costs — but the fact of the matter, now the drill I have can still be used over and over again.

So I go back to the argument with the solar power concept. And I know it's confusing, but is the argument still that solar power is just as, if not better, based on the fact that how much energy it took to construct it and build it because you can use it over and over again? Are they taking all along rechargeable aspects of solar energy batteries into account when they talk about the energy to produce it?

**Mr. Weis:** — So I think what you're asking about is the life cycle analysis, or the life cycle cradle-to-grave or cradle-to-cradle. And I don't have the numbers for solar offhand in terms of what they are, but I know it's positive: the amount of energy that it takes to go into a solar panel, you get more out of it over its lifetime.

Again the important thing is that it's really, really changing very quickly, and so if I knew the number offhand today, it's going to be different tomorrow because the technology's improving so fast. But the point I do want to make is that what you don't do is add a battery to the solar system. What we're talking about here is having the solar panel feed directly into the power grid. And so the cost of the battery and even adding a battery to the system is not something that we're talking about in this situation — that's for remote communities or for boats or off-grid type of thing or cottages. But in this case, to save the money and to save the investment, we're talking about feeding directly into the grid.

Where we're probably going to see batteries — and this is something that I think we haven't really wrapped our heads around yet — is electric cars and plug-in cars and those are

going to be all sorts of batteries that we're going to have probably at some point in time disposable to us, to be able to balance peaks and shift around demand and those sorts of things. So we are going to see batteries on the system and very likely they're going to come from cars.

**The Chair:** — We're getting close to, well we're actually past our allotted time. Before you finish, I just want to confirm this document is to be tabled with the committee.

**Mr. Weis:** — Yes. That's the one. Yes.

**The Chair:** — It will be on the website for everyone to access here. Well thank you very much for your presentation and taking the time to answer our questions today. We will now recess for a few minutes, and we'll be back here momentarily.

[The committee recessed for a period of time.]

**The Chair:** — I'd like to welcome everyone back. Before we hear from our next witness, I would like to advise the witness of the process of this presentation. I'll be asking all witnesses to introduce themselves and anyone else that may be presenting with them. Please state your name and position of the organization. If you have any written submissions and would like to table the submission, please let us know. Once this occurs, the submission will be put up on the website and will become a public document.

The committee is asking all presenters to present in answer to the following 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. We have 10 minutes set aside for question and answer, but if the witness is willing, we'll likely go over with that. I will then ask the presenter to proceed. Once your presentation is complete, the committee members will be asking the question.

With that I would ask you to take us through your presentation. Thank you.

**Presenter: Green Party of Saskatchewan**

**Ms. Shasko:** — Thank you. My name is Larissa Shasko. I am the Leader of the Green Party of Saskatchewan. I am here today to, as we have said, answer the question. And this 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 regulations and maintaining a focus on affordability for Saskatchewan residents today and in the future?

I believe to answer this question we must begin by first unpacking the question itself. So the question asks how government should best meet the growing energy needs of this province. However, throughout my lifetime, the population of Saskatchewan has remained basically stagnant, hovering just

over or below 1 million people. So I ask this government, why are the energy needs of our province growing, especially in light of the problem of climate change, at a time when we should be maximizing energy conservation to reduce our energy consumption? This question itself is leading the process in the wrong direction. Perhaps it should read, how can the province best meet the growing energy needs of industry?

The UDP [Uranium Development Partnership] report proposed exporting 4 to 5000 megawatts of electricity to Alberta for tar sands production. At a lecture at the University of Regina Johnson-Shoyama Graduate School of Public Policy on June 18, 2009, Dr. Richard Florizone, Chair of the UDP, stated that using nuclear power to green up the tar sands industry was a step towards addressing climate change. This statement is not only false, it is incredibly misleading. The reality is the opposite: using nuclear power for tar sands production would actually be taking us closer to the tipping point of climate change, and it was irresponsible of Dr. Florizone to state otherwise.

The Alberta tar sands have recently been deemed the most environmentally destructive project on earth by Environmental Defence Canada because they will single-handedly prevent Canada from meeting international targets for lowering greenhouse gas emissions.

The Wall government and Dr. Florizone continue to lead us down the wrong path, as we can see, as this government and the U of S [University of Saskatchewan] have put in a proposal to the federal government for a research reactor.

Since the leaky, old Chalk River reactor is now too unsafe to operate and the MAPLE [multipurpose applied physics lattice experiment] reactors have been abandoned because of escalating cost overruns and major safety problems that can't be fixed, the federal government recently began accepting proposals from other provinces and locations interested in producing medical isotopes for the Canadian market.

While the Wall government and the University of Saskatchewan have put in a proposal for \$750 million to produce medical isotopes using a research reactor, the University of Winnipeg has put in this proposal to produce medical isotopes within three years using a cyclotron at a cost of 35 million.

I ask you to bear with me because it does definitely tie into our energy needs in just a minute.

The nuclear industry implies that nuclear power is necessary if we want medical isotopes, but the reality is that many currently used medical isotopes can be and are produced without nuclear reactors, using particle accelerators or cyclotrons. Although accelerators do create small quantities of lingering radioactivity, they do not pose the staggering high-level waste and proliferation problems associated with nuclear reactors, nor do they have any potential for catastrophic accidents of any kind, nor are they capable of producing weapons materials in militarily significant amounts.

So then why would Harper even consider Saskatchewan's \$750 million proposal to produce medical isotopes with a nuclear

reactor when the University of Winnipeg can produce isotopes using a cyclotron for 35 million? The UDP report contains some answers. The key figure at the University of Saskatchewan involved in the current proposal for a research reactor appears to be Dr. Richard Florizone, vice-president of finance at the U of S, who was also the Chair of the government-sponsored and industry-stacked Uranium Development Partnership.

As pages 81 and 109 of the UDP report make clear, a research reactor at the U of S would not be used to research medical isotopes, but rather for other areas of research including small-reactor technology. There is interest in small-reactor technology for mining companies looking to use small reactors for mining at remote locations, or in other words, for nuclear-powered mines. In the case of the tar sands, the main purpose of small reactors would be remote deployment, using nuclear power for tar sands extraction, reformation, and refining, which raises questions around emissions monitoring and regulation, waste transport and disposal, security risks, and preventing diversion of materials for use in nuclear weapons. Offering this technology to an industry already known for its appalling environmental record and its disregard of the rights of indigenous peoples would be a mistake, to say the least.

The additional suggestion made in the UDP report of developing small-reactor technology so that small reactors could be used to provide power and heat to remote communities in place of diesel or propane generation is incredibly concerning. How could any government even think of powering remote communities, many of which have no access to emergency services, with a technology that destroys ecosystems and has proven time and time again to be unsafe? Subjecting remote communities to what the nuclear industry calls first-of-a-kind risk would be a continuation of the violation of human rights of indigenous peoples.

Since the research reactor at the U of S would be used to develop this technology, the Government of Saskatchewan's proposal for this reactor should be abandoned. This technology is too expensive, too dangerous, and is not needed because there are safer alternatives.

Now I move to further unpacking the question. It asks us to focus on "... in a manner that is safe, reliable, and environmentally sustainable ... and maintaining a focus on affordability." We can meet the province's energy needs with simple, clean, and affordable power instead of using expensive and dangerous technology to produce more than we need. The Green Party of Saskatchewan opposes plans for building a nuclear reactor in Saskatchewan of any size, and we oppose plans for turning the North into a nuclear flow waste dump. The Government of Saskatchewan must develop an extensive energy conservation program and foster the creation and implementation of alternative methods of energy production.

[13:15]

Why not a research centre of excellence for renewable energy and energy conservation at the U of S to foster innovation and green energy technologies? There are a number of policy measures to take that will help meet the energy needs of the province in a manner that is safe, reliable, and environmentally

sustainable, such as developing a province-wide smart grid to increase the efficiency of power transmission and take advantage of increased renewable energy production. Having SaskPower pay for all excess power production produced by private citizens, corporations, or co-operatives from renewable sources to stimulate maximum interest and renewable energy production, the rate of reimbursement should be more than the commercial rate charged by non-renewable energy sources such as coal.

We can end subsidies to all established non-renewable energy industries and transfer these funds to subsidize the purchase and development of renewable energy production by both small- and large-scale producers. We can pass legislation to ensure that all new houses and housing developments are designed to take advantage of Saskatchewan's abundant passive solar potential. This includes mandatory installation of solar hot water heaters, solar air heater and hot water heat-recovery systems on all new houses and mandatory installation of digital electrical control panels, i.e., a green switch that readily shows individual energy consumption as well as gives the ability to easily turn off all unnecessary power in all new houses — great, positive steps towards the question that we are here to answer today.

The Government of Saskatchewan should also develop a program to retrofit all existing houses in Saskatchewan with such devices, and this includes full funding provided to homeowners and renters who could not otherwise afford to. I don't think in this day and age with the urgency of climate change that the ability to afford energy conservation technologies should be a barrier in order to meet the targets and reduce our emissions as we need to for future generations. We can meet the province's energy needs with simple, clean, and affordable power — green power.

Nuclear power, on the other hand, is not safe, not reliable, not environmentally sustainable, and not affordable. Nuclear power is fiscally unsound. The Green Party believes that energy choices should be economically rational. The best energy choices to respond to the climate crisis should be those that deliver the greatest reduction of greenhouse gases per dollar invested. By this criterion, nuclear energy is among the very worst options. Reactors cost billions of dollars, take more than a decade to build, operate unreliably after about the first dozen years of operation and only produce one type of energy, which is electricity. Even if the industry were green and clean, as claimed by the pro-nuclear propaganda efforts, it fails on the economics. And nevertheless it is neither clean nor green.

And I believe it is necessary to include and to point out that the question that we are here to answer today does not have a place for nuclear power in the options that are presented. It doesn't meet the criteria. And until I see solid plans of this government and a solid commitment to not pursue nuclear power of any size in this province, then I believe that it is necessary to raise these issues in this committee today.

Nuclear waste cannot be stored, treated, or disposed of safely and remains toxic for hundreds of thousands of years. A large amount of radioactive tailings accumulate as a result of uranium mining. These tailings can leak into groundwater and affect the surrounding area, leading to increased cancer rates.

Depleted uranium ends up in weapons such as missiles and anti-tank bullets. Nuclear power is not emissions free. Large quantities of greenhouse gases are produced in the mining and refining of uranium, as well as during the long construction period of the power plant. A reactor's fuel rods, pipes, tanks, and valves can leak. Mechanical failure and human error can also cause leaks. As a nuclear plant ages, so does the equipment, and these leaks generally increase, as we can see with Chalk River.

It doesn't take an accident for a nuclear power plant to release radioactivity into our air, water, and soil. All it takes is the plant's everyday routine operation, and federal regulations permit these radioactive releases. Nuclear power is not safe and not reliable, as I have said.

I draw attention to an article in *The Globe and Mail* on page A7 of the June 29, 2009 edition, entitled "Reactor design puts safety of plants into question." The reactors, all the nuclear reactors at Canada's electricity generating power stations use CANDU technology. CANDU technology uses what's called positive reactivity feedback.

Now the problem with positive reactivity feedback is it's a feature in which their atomic chain reactions automatically speed up if the water pumped into the reactors to cool them leaks, one of the worst accidents possible in a nuclear station.

Now according to the internal commission document which this article cites, commission staff have always known that CANDU nuclear power plants have positive reactivity, but they conceded that they miscalculated the magnitude of the condition. For instance, they say they underestimated a number used to measure it by 50 per cent. Because of this, this discovery prompted the regulator, the Nuclear Safety Commission, to warn that it may have to order plants to run at less than full power indefinitely to compensate for what it deems as less safe conditions at the stations, and governments have had to spend considerable money dealing with this problem and addressing it, which I think is the latest example of how nuclear power is neither safe nor reliable and doesn't meet these criterions.

Now this government, the Wall government, has wasted \$3 million on the UDP report which was overwhelmingly rejected by the people of Saskatchewan in the recent public consultations as Dan Perrins' report shows. The UDP was not about energy options for Saskatchewan, but rather it was about propping up the uranium industry. Since \$3 million was spent on a feasibility study for just nuclear — which is not safe, reliable, affordable, or environmentally sustainable — is this government prepared to allocate the same resources on feasibility studies for each of the following energy options that do meet these requirements as in wind, solar, biomass, geothermal, small hydro, and first and foremost, energy conservation which is highly underutilized in this province?

I think the first step that we need to take is energy conservation because we can't fully evaluate what our energy needs even are until we do take those measures. We're behind the times with that. And as a young person who was born and raised in this province, I've struggled as I've been waiting for this action to happen so I ask this committee to make it happen.

I now move on to the section of the question that asks, “while meeting any current and expected Federal Environmental Standards and Regulations.” Here I draw attention to carbon pricing, carbon tax. At Dr. Florizone’s lecture at the University of Regina Johnson-Shoyama Graduate School of Public Policy on June 18 — one that I’ve already drawn attention to — Dr. Florizone said that nuclear only becomes cost competitive when you have carbon pricing. The first problem with this statement is that we do not have carbon pricing in Saskatchewan yet.

There does not appear to be much support for the carbon tax from either Premier Wall or Prime Minister Stephen Harper. And I think some would say that proposing the carbon tax is what in some ways lost the election for the Liberals in 2008 — the federal election — regardless of the Green Party’s stance on it which, as I’m sure many of you know, the Green Party at the federal level is in favour of a carbon tax. The problem with this is that if nuclear only becomes cost-competitive when you have carbon pricing — and we don’t have it in Saskatchewan; and we don’t have the support, reasonable support, from provincial or federal government — then nuclear is not cost-competitive in Saskatchewan at this time.

Furthermore if a carbon tax policy is enacted at either the federal or provincial level — which I believe is a reality, that it’s part of this expected federal environmental standards and regulations of this question — the purpose of a carbon tax is to make polluting less attractive. And of course we can see how the toxic waste of nuclear power doesn’t fit into this equation. And governments will never be able to successfully implement solutions to climate change if large final emitters aren’t able to find innovative ways out of the carbon tax while actually profiting it, often with government-sponsored research.

Take the incredibly expensive and unproven technology of carbon sequestration. Now as a footnote, I object to this government’s use of the term, clean coal. Please do not use this term. There is no such thing as clean coal and there never will be. And this is greenwashing language that confuses the public, and this is not an area where we should be confusing the public.

The University of Regina Petroleum Technology Research Centre, known as the PTRC, researches carbon sequestration. And PTRC is heavily funded by large international oil companies and also the Government of Saskatchewan. These oil companies are investing in it because they plan to use carbon sequestration for enhanced oil recovery — in other words, they plan to pump the sequestered carbon into dried-up oil wells to change the viscosity of the dried-up oil so they can pump 30 more years of oil out of the ground.

Now we can obviously see how this is not meeting the criteria of sustainability, and I believe this is another case of an unacceptable abuse of a tax on carbon, which is a tool designed to reduce pollution. The carbon tax is not intended to fuel nuclear expansion or enhanced oil recovery, and I ask as these federal regulations come into place that this government addresses it with a great deal of responsibility.

I am very close to a point where I probably can stop, but can I ask the committee’s permission to continue for another five minutes?

**The Chair:** — Go ahead.

**Ms. Shasko:** — Thank you very much. I must point to the plan for climate change that my generation has seen from the Wall government is incredibly flawed. The youth of this province are depending on this government to come up with real solutions. And instead we have seen this government put all of its eggs — and its predecessors — we’ve seen them put all of their eggs in one basket with an incredibly expensive and unproven technology called carbon sequestration. We need to use this chance to actually implement technologies that are affordable and proven instead of wasting money on research that — like I said — is fuelling enhanced oil recovery.

The youth of this province want green jobs. Why are so many people forced to work in unsafe conditions, in jobs that run out when the natural resources do, when there are green jobs available to them?

If we are to change to a community-based green economy — green energy economy that can meet our energy needs while providing long-term solutions to the current economic crisis — energy retrofitting and the installation of decentralized renewable energy technologies must be done at the local level. And this means the creation of many new green jobs — many new jobs, period — at a time when we desperately need these jobs. There’s a reason why so many governments around the world have opened their eyes to realize that the green energy economy is the single greatest opportunity to revitalize our economy and address the current economic recession in a way that it will provide long-term solutions. And it’s time for this Government of Saskatchewan to do the same.

I point to ecological economist, William Rees, who points to there is general agreement that no development path is sustainable if it depends on the exhaustion of productive assets, and that human-made capital is made from natural capital and requires natural capital to function. Therefore natural capital is prerequisite to manufactured capital.

This is an important lesson to learn when it comes to meeting our province’s energy needs. It’s called ecological wisdom, which is a guiding principle of the Green Party of Saskatchewan. This means that human societies must operate with the understanding that we are part of nature, not separate from it. We must maintain an ecological balance and live within the ecological and resource limits of our communities and our planet. We must support a sustainable society that utilizes resources in such a way that future generations will benefit and not suffer from the practices of our generation. This means we must move to an energy efficient economy.

Just because we won the lottery by living in Saskatchewan doesn’t mean we have to spend all of our winnings in one generation. If we continue to be heavily reliant on resource extraction and exportation of non-renewable resources, what will be left of our province when these resources run out? And what will be left for the people who live here? I know it’s a difficult question that you’ve been posed to answer, but we have our duty to make sure that these solutions are going to last more than just 10, 20 years, more than my lifetime.

And I will close. In this section I actually have an unpacking of

the today and into the future part of the question. A great part of this part of the question is it allows me to make the point that, unlike non-renewable sources of fuel, the cost of renewable sources can be predicted into the future as long as the wind blows and the sun shines, which is very refreshing for a committee whose task is to plan for the future.

I won't go into detail on my biofuel section because I have appreciated the extended time already. But I must, I would like to just explain that I've included this example. It's a brief case study of the energy mismanagement that I was able to see as a student of ecological economics with the Government of Saskatchewan's biofuels policy.

I really encourage you to read through this section and through the recommendations. I think with biofuels in particular, the government subsidies are encouraging a renewable source of fuel to be developed in a way that is not environmentally sustainable and is adding to the problem of climate change. In fact it's adding to the problem of the worldwide food crisis.

It was not done intentionally. It was more so the way that this program evolved, a program that was initially intended to . . . that could have been utilized in a much greater way — and still can be — by switching to cellulose and waste. So agricultural co-products or forestry waste to produce our biofuels instead of growing grain directly for this purpose, and in some cases shipping corn from the US because wheat producers in Saskatchewan don't want to turn their wheat which is of great value into fuel. So I do encourage you to read this section.

[13:30]

I really believe that it will help in the one area of biofuels, but it will also offer an example of how putting sustainability first can provide government with direction and energy policy-making initiatives. It's, like I said, but one example of many that shows how this government is failing to best meet the energy needs of the province in a manner that is safe, reliable, and environmentally sustainable as well as affordable.

So I thank you very much today for this chance to present before you.

**The Chair:** — Well thank you very much. I think we've certainly got some questions, so we'll move straight on to them. Mr. Weekes?

**Mr. Weekes:** — Thank you, Mr. Chair. Well thank you very much for the presentation. It was very interesting; many areas that we can ask questions on. We've got plenty of time so we can hope to get to them all.

Your opening comments, one thing that I picked up about, I guess, your comments that we don't need a growing population and a growing economy. Well, quite frankly, I take exception to that. Our government is, that's our plan is to grow the economy and grow the population. And we can argue about the rate of growth in the future, but it will be happening. But that lends itself, of course, to increased need for electricity and energy to run the economy.

I guess my first point on that is, what do you feel that, that

industry and the population of Saskatchewan is willing to pay for increased costs of electrical generation? Every presenter we've had agreed that there's going to be increased costs regardless of which mix that the province goes along in the future generating power.

What is your feeling on the increasing cost and who should be paying that? And if you have a number, how much they should be paying?

**Ms. Shasko:** — I think that's an excellent question, and it's a question that I would love to pose to this government actually as well, and to reciprocate that. Because while you were asking me about what do you think the people of this province would be willing to pay for increased costs for renewable energy sources and energy conservation methods that are sustainable, this government has not asked that question of the people before — proposing that we pay for increased costs because of nuclear power and carbon sequestration, two technologies that in the energy mix of things just blow the renewables out of the . . .

I think from my understanding, as well of my colleagues on both federal council of the Green Party of Canada and the Young Greens council who live in Ottawa and Ontario, there are energy companies there that provide renewable energy, that's provide energy sources from renewable energy. So you know your electricity isn't coming from nuclear power, and you know that it isn't adding a great burden to your ecological footprint.

And these companies are doing very well. Most of my colleagues and many of their friends opt to pay for . . . It's not much of an increase; it's more of getting it from a different source. It works into the Government of Ontario's electrical mixes, the ways that they meet the energy needs of their province. And it can for ours as well, and the interest will be there.

So while the information I've seen, I'm kind of I guess missing how entirely, when we are proposing nuclear power and carbon sequestration, how renewable energy then is an unfair expectation of any increased costs that it may bring. And increased costs are artificial to begin with because as soon as you internalize the externalities of coal, then it doesn't become so inexpensive any more. Asthma adds a lot to our health care system. As an asthmatic, I know; I know. And I think that there's actually a great ability to reduce the cost of our energy needs when you take the entire system and the externalities into account.

**Mr. Weekes:** — If I may just follow up on that, I understand your position on nuclear. My question will . . . just take the nuclear file out of our questions and answers was fine with me, but I'll just go back to all the presenters.

You know, renewables are going to cost more than our conventional sources. Our economy is run on dirty coal. There's no doubt about it, and it will do for the foreseeable future as we implement a different mix of energy sources. And that's, well that's what this process is all about, is how to get there.

As SaskPower had said, we have an aging infrastructure in our

power generation system. There hasn't been infrastructure investment, you know, for the last 20 years of any extent since Shand power plant was built — in 1993 I think it opened. So we're kind of catching up to replacing the aging infrastructure. And if you factor in population and industrial growth, SaskPower and our province, obviously we have to look at what we do in the future to make up for replacing the aging infrastructure and for new growth.

My question again, you made some general comments about alternative energy, renewables, and that's obviously going to be part of the mix. Going back again first price, we talked about price, but what mix? As one of our members said before, solar is fine, wind is fine, but what happens when it's minus 40 and it's dark and the wind isn't blowing? You know, what is the mix that's going to look after our baseload? Right now it's coal.

And I guess that's my question to you. I understand where we want to get. I don't think many people have an argument about where we should be by 2050 or even before that, but boy, there's a lot of hard questions and work and investment need to begin between now and then to get to that point. And I guess my question is — I don't know if you're prepared to answer that on a technical basis — but you know how are we going to supply that baseload when it's minus 40 and it's dark and the wind isn't blowing?

**Ms. Shasko:** — Well I think that the very technical answer is best left to the technical experts, but I can definitely answer your question, and I am definitely willing to. I think if this government was prepared to upgrade our grid so that we can export power to Alberta, then why can't we upgrade our grid so we can import power from hydro-plentiful Manitoba. It's definitely something that on those few, very few days that are made out to be — I think this problem is being made out in somewhat of a fearmongering sense — that it's very dark and grim, and that there's many days where we are not going to be able to meet our energy needs. It's just not true.

It's just not true for a number of reasons because we can't answer, and the nuclear industry has been unable to answer, the carbon sequestration industry is unable to answer the hows and the ifs and the whys of their problems that they come across. And we're funding those areas of research with millions or in some cases billions if you take into worldwide accounts, yet we can't fund renewable energy technologies.

Any problems that there are with renewable energy technologies in their current state, in terms of being able to fully be utilized by this province, are more to do with our grid and the fact that we don't have a smart grid. If we can re-adapt our grid so that it can fully harvest the potential of renewables, I don't believe we'll be having this problem on any of the days. And as technologies are developed for storing the renewable electricity — not just developed, but furthered — like Tim from Pembina had said, these technologies are changing so fast that the facts, the statistics on them one day are not the same the next. And that is the truth.

It's an exciting prospect when you have an area of technology, especially energy technology, that is so new and under-researched that so many solutions and so many exciting new ways to meet our energy needs can come out of that

research. But it has to be funded. And if we continue to put all of our funding into carbon sequestration, it's just not going to happen. There's only so much money to go around.

**Mr. Weekes:** — Thank you.

**The Chair:** — Mr. Belanger.

**Mr. Belanger:** — I think we've heard some very compelling arguments and points and presentations the last couple of days, and we're looking forward to hearing more compelling points and presentations. One of the messages that certainly stuck in my mind was the fact that, prior to you, there was a presentation that spoke of the need to refurbish our current system. And as a result of that, people can expect the power corporation to spend money, and thus more than likely the consumer paying for it. So if you're going to spend the money, the consumer's going to pay for it, let's invest into this green technology as opposed to what we have now. It only makes sense.

What would you characterize the challenge in doing that? Where would you say it lies? Would we say it's stuck in the provincial government's handling of it, or is it the power corporation mentality? Is it the consumer not wanting to pay more? How would you characterize the battle in trying to reach what you perceive as, and what many people agree, as the need to get into the green shift, so to speak?

**Ms. Shasko:** — I think it's a combination of all those factors that you listed. I think the one important step we have to take is simply rethinking how we currently think about our energy needs and even our economy.

I pointed to internalizing the externalities, and I think that that's very important, that message, to get across to the general public. Because the consumers, if they understand that the price they're paying on coal may actually be a lot higher — well actually would be a lot higher than wind and solar if they factor in the taxpaying dollars that they are paying as well for our health care system — so if we can save money on health care by reducing cancer rates and asthma from coal, then it makes complete sense. And I think that that argument is what most people in Saskatchewan who have very deep sentiments towards our health care system and making it as great as it possibly can and relieving the burden that we don't have the answers for with our health care system, we've got a lot of problems to deal with with it, including lack of funding.

So I think that the most important step towards acceptance from the public and from the consumer is education that these inexpensive prices are false. And that is a mentality that I hope governments will actually enact at the policy-making level by internalizing those externalities in our energy prices and in our prices of the products, the energy resources that we use.

As far as the other levels, I think that we have since . . . As a student of political science and someone who has studied federalism and the interrelations between different levels of government, climate change and the environment are two problematic areas. We need better coordination between the two. We need to make sure that our institutional levels of government — our institutions themselves — do not keep us years behind from where we should be in terms of our climate



change solutions.

I think it's a problem that we see a lot and we study a lot as political scientists, of the institutions, our political institutions perpetuating injustices, and in this case, irresponsible ways to be using our energy resources. And I think that the solutions are not going to be easy to find, but the first step is conversations. And those conversations aren't happening. It seems we fit within this bubble. The question today actually asks, how can you fit within these current and expected federal regulations? Why aren't these regulations being established outside of this complete structure that keeps us confined to the provincial government, this is just your job, and the federal government tells you what your job is.

But why are you not able to tell the federal government that, one instance, that it wasn't this government's choice, but intensity-based emission targets have really messed up the climate change strategies that any province in this country may have had. If you remove that regulation, it very much opens up the doors to what the provinces can do. And I think that there's many provinces that would never have had that regulation removed because that means that although they are committed to maintaining their low regulations — I'm thinking of Quebec — they may not be too happy with Saskatchewan, who per capita produces more greenhouse gases than any other province in this country.

So I think that even at the municipal level — I'm currently running for civic election in Moose Jaw as a councillor — and we certainly have problems with focusing on even that at the municipal level. How do we implement renewable energy solutions without just saying, well that's a provincial jurisdiction? It's not. Urban sustainability includes meeting energy needs, decentralize energy needs in a community. And I think at some point, we're going to have to have this conversation at a very broad level.

**Mr. Belanger:** — Right. And I think one of the things that's really important is that note that you mentioned in terms of having the discussions. And that's exactly one of the reasons why I think the committee wants to hear from the public in general because the UDP process was flawed from day one. I think all of us in Saskatchewan agree; just a few people may not, but most of us do. And I would point out that the heavy and consistent discussion — given the same resources, same concentration, the same timeline that we afforded the uranium debate — ought to be extended to hydro, to solar, if not increased in those particular categories. So I don't think anybody's disagreeing with you on that front.

[13:45]

And I think there's a lot of frustration within Saskatchewan, particularly with the young people, in the sense they're saying we need to do this. And then we know the power company needs the energy, and then there's this huge confusion in the middle. So how do we get it done? And that's kind of what we're trying to figure out. And having nine meetings originally, and now eighteen, and maybe even more, I think that's one of the first steps we ought to take as part of the process.

Now my question to you is that in terms of the industry itself —

we're not saying this in a negative context, but I think if my numbers are wrong, I suggest we be corrected — but 35 industrial customers consume 45 per cent of our energy in Saskatchewan. I think that's the number 35, 45 — 35 customers, 45 per cent. We obviously can't work against the economy because it's important for people. Now that's the challenge that we have through a process and consultations is, how do we square that circle? Because we know that people want to work. We know we can't turn the lights on or off. We know that we got to start that shift to green energy. And if all this is known, where's the process to make it happen?

And based on some of your recommendations, where do you think the number one challenge lies in achieving and getting some solution to that middle ground that I'm speaking of between the demands and the need to shift?

**Ms. Shasko:** — I think that the number one step is ensuring that we have a smart grid that allows small decentralized energy production to be fully utilized. We can't move towards an energy economy where we can . . . Just as much money can be made, more money can be made, and it can stay in this province instead of going where these customers' headquarters are.

It's going to be a gradual shift, but it is not going to be a shift that is going to in any way hurt our economy. It is going to do the opposite. And I know this is a lot to wrap your minds around. And it's certainly . . . I wish I could suggest to all of you to take ecological economics from Brett Dolter at the University of Regina because I think that would certainly help.

Ecological economics is a new field where they're asking these very difficult questions. When I was taking this class, we were in many cases dealing with research that was done in the 1970s. And as the current economic patterns of continuing to allow energy production methods, which are a central component of ecological economics, to become more and more centralized, this field of study was left off the table and is now desperately being gripped upon and researched and furthered. And it's a growing body of knowledge growing faster than probably, in some cases, any discipline out there.

So I encourage this committee to, I would encourage you to have an ecological economist make that presentation to you. I'd recommend William Rees. I believe he is at the University of Victoria, although I would have to double-check that. And his name is in here; it's Rees, spelled R-e-e-s.

And I think these questions of how do we make this transition are really important, but I also really encourage this committee to recognize we're not the first province to do this. We're not the first place in the world to do this; we're the last. We really are. The other places have figured out these solutions. As a political scientist and also as leader of a provincial party that is still growing by leaps and bounds, I know the best way to move into a new area of uncertainty is to use the steps and trials and tribulations of other organizations and provinces and groups that have already gone through and faced these problems and found their answers.

**Mr. Belanger:** — Thank you very much for your presentation. And I think one of the points that that raises, that what is necessary in the green shift, so to speak, is courage. And I think

all the parties obviously ought to learn from that. And I think one of the things that's really, really important is that the information that we're getting is a tiny bit of what we ought to get from a variety of experts and people that really know how to do this.

There's a difference between experts and proponents, obviously. You know, the experts can guide us and the proponents can supply us, but it's important to put that into a good, tidy package for the people of Saskatchewan to ponder and I think eventually embrace. Part of the embracing of the new way of generating power is understanding that it's sustainable — a bit more expensive, but it's for the good of the future of Saskatchewan. So thanks very much.

**Ms. Shasko:** — Thank you. I'm really encouraged too to keep in mind that meeting the energy needs in a way that is sustainable, environmentally sustainable, and safe and reliable is definitely the best way to ensure that we have a healthy economy long into the future, past just the end of your generation, past my generation. I'd like to see this seven generations into the future at least, this committee's plan. I believe if you take a seven-generation focus, it will change your answers and your actions.

**The Chair:** — I've got a couple of questions, and we are getting fairly close to the end so I'm going to keep my questions short. And I know your answers have been very thorough, but if . . .

**Ms. Shasko:** — I'll try to keep my answers short as well.

**The Chair:** — Perfect. My background is economics, so when you talk externalities, you're talking my way of thinking as well. And trying to include in the big picture — not what it costs to pull it out of the ground and burn it and ship it down a wire — what's all the cost? What's the price of global warming? And I guess that's when we talk carbon tax, we're pulling that externality in. When we're talking the health care side of it, we're pulling that externality in. All in, you know those numbers start getting big and that's where, you know, you have to compare apples to apples. You know, solar doesn't look like it makes economic sense, but when you start comparing all externalities in, that's where it becomes cost-effective.

My question is, we saw in the last federal election the Liberal Party made a bold stance that they thought the carbon tax was something they were going to stand on. You know, I'm not going to say that's why they lost the election, but you know there was leadership there. You know, carbon tax is a bit of a dirty word after that, and it's going to take a lot of courage for whichever federal party or provincial party is going to run on that. Right now there's a lot of conversation around the world, what should that carbon tax be. Do you have a number you can throw out there as to, you know, what is an appropriate tax on carbon to pull in the externality?

**Ms. Shasko:** — And I do have this number in *Vision Green*. *Vision Green*, the Green Party of Canada's platform, I will refer you to. It does have the accurate number. I wish that I had it in front of me right this moment, and I normally would be able to recall it right off the top of my mind. It's been an information-intense couple of weeks for myself as a student and

with all these processes that are happening that are great to see. I think that a realistic price . . . I know it's definitely set up by *Vision Green*, so I refer you to there.

And I also think that one of the biggest mistakes that the Liberal Party did in the last federal election was not provide the proper education — and that's the media as well — didn't foster that with a carbon tax. It was, it was unfortunate because it's a policy that even the C.D. Howe Institute says is necessary. So then why do we have this much resistance to it when in reality what it would do is lower income taxes?

**The Chair:** — When we start pulling in all the externalities of health care, of everything, you start getting on all energy sources to the point where there is a shifting of consumption patterns. Do you have an idea, right now they tell us it's about six and a half cents is what their production cost is. They're selling it to the people of Saskatchewan for about 10 cents a kilowatt hour. Do you have a feel for where consumption patterns would be shifted with . . .

**Ms. Shasko:** — I don't in that sense. What I do know is that according to ecological economists, we need to focus on a factor 10 economy. It's called a factor 10 economy because that means we need to take our current energy usage and reduce it by a factor of 10. And this is to allow and accommodate for the population growth that is expected to happen as we move ahead, so that by 2050 we need this factor 10 economy in order to survive so that my children can become grandparents one day. My children, if we don't reach a factor 10 economy by 2050, my children won't be grandparents.

And that's a reality that the youth of today are born into, which is why I think you'll find many more of us approaching the subject of climate change with a lot more urgency than many of the people in roles of decision-making and power.

**The Chair:** — We heard from SaskPower about the smart grid and several other presenters as well as yourself. That's a technology that I think is being developed at different places and being utilized to different amounts, but is showing promise. And you look at the possibilities and it will again. Talk about shifting consumer habits; if you build by when you use power, you will probably do it more appropriately. But there is going to be a cost, and I believe it was Mr. Belanger talked about the cost that has to be rolled on to the customer on something like that.

You also spoke of putting retrofits into houses and that affordability shouldn't be an issue there, that again, I guess, the cost goes on to the consumer as a whole. Maybe one individual can't afford to retrofit their house but, you know, everybody's electricity bill goes up to pay for it.

Something that is part of our question we put out that you were to respond to, and you did, is in the most cost-effective manner. Many of the things moving forward, we all I think can agree where we are, where we want to get to. The mechanism and what happens in the minutiae is the difficult part. But I think to get from A to B is going to see a lot of costs.

Is there middle ground on that? How fast? You say by our grandkids won't be having kids if this doesn't change, but

what's the middle ground? Give us a quick road map of how we can fill in that middle spot.

**Ms. Shasko:** — I think it's very easy to see. We need to phase out subsidies to non-renewable resource energy . . . [inaudible] . . . Meeting our needs with non-renewable resources — our energy needs — while phasing in subsidies for these other costs that are going to be coming along with updating our grid and energy retrofitting for those that can't afford it. There are many people in this province that can afford energy retrofitting.

If you noticed, actually the policies I read off were for focusing primarily on new housing developments. So if you're building a new house, it doesn't add very much. It's a great statistic that I wish I had with me today that shows the actual increase of cost to build a house, but then the decreased energy consumption over a period of time, so it pays for itself rather quickly.

I think that if we can phase out the subsidies, we have to recognize that this has to be done in a phase-out and phase-in pattern and it doesn't become so scary any more and so unthinkable any more. It becomes very doable and it also provides a gradual shift in our abilities to meet those energy needs. Actually I believe that this shift as these renewable energy technologies, since it will be done in a phase-in and phase-out way as these renewable energy technologies continue to become lower in cost as their use increases and, as the technology simply becomes more cost-effective, then it'll actually be lowering our costs over the long run. But I do think it's important to phase out the subsidies for non-renewable resources while we phase in subsidies for meeting our energy needs.

**The Chair:** — Okay. Well thank you. We're pretty much at the top of the hour, so on behalf of the committee, I'd like to thank you for taking the time to come and present to us today and to take the questions that you did. Thank you very much.

**Ms. Shasko:** — Thank you very much for having me here and for asking us to answer this question today. I wish you the best of luck, and I hope that you're able to carry the perspective of the seven generations into your journeys.

**The Chair:** — Thank you. Tomorrow morning the committee will be meeting in Saskatoon at 10:00 a.m. Could I have an adjournment motion?

**Mr. Bradshaw:** — I'll do that.

**The Chair:** — Mr. Bradshaw has moved that we adjourn. Is it the pleasure of the Assembly ?

**Some Hon. Members:** — Agreed.

**The Chair:** — Agreed. This committee stands adjourned until 10:00 a.m. tomorrow morning.

[The committee adjourned at 14:01.]