



ISSN 1499-3783

Legislative Assembly
of Ontario
Second Session, 37th Parliament

Assemblée législative
de l'Ontario
Deuxième session, 37^e législature

**Official Report
of Debates
(Hansard)**

Monday 18 February 2002

**Journal
des débats
(Hansard)**

Lundi 18 février 2002

**Select committee on
alternative fuel sources**

**Comité spécial des sources
de carburants de remplacement**

Hansard on the Internet

Hansard and other documents of the Legislative Assembly can be on your personal computer within hours after each sitting. The address is:

<http://www.ontla.on.ca/>

Index inquiries

Reference to a cumulative index of previous issues may be obtained by calling the Hansard Reporting Service indexing staff at 416-325-7410 or 325-3708.

Copies of Hansard

Information regarding purchase of copies of Hansard may be obtained from Publications Ontario, Management Board Secretariat, 50 Grosvenor Street, Toronto, Ontario, M7A 1N8. Phone 416-326-5310, 326-5311 or toll-free 1-800-668-9938.

Le Journal des débats sur Internet

L'adresse pour faire paraître sur votre ordinateur personnel le Journal et d'autres documents de l'Assemblée législative en quelques heures seulement après la séance est :

Renseignements sur l'index

Adressez vos questions portant sur des numéros précédents du Journal des débats au personnel de l'index, qui vous fourniront des références aux pages dans l'index cumulatif, en composant le 416-325-7410 ou le 325-3708.

Exemplaires du Journal

Pour des exemplaires, veuillez prendre contact avec Publications Ontario, Secrétariat du Conseil de gestion, 50 rue Grosvenor, Toronto (Ontario) M7A 1N8. Par téléphone : 416-326-5310, 326-5311, ou sans frais : 1-800-668-9938.

Hansard Reporting and Interpretation Services
3330 Whitney Block, 99 Wellesley St W
Toronto ON M7A 1A2
Telephone 416-325-7400; fax 416-325-7430
Published by the Legislative Assembly of Ontario



Service du Journal des débats et d'interprétation
3330 Édifice Whitney ; 99, rue Wellesley ouest
Toronto ON M7A 1A2
Téléphone, 416-325-7400 ; télécopieur, 416-325-7430
Publié par l'Assemblée législative de l'Ontario

LEGISLATIVE ASSEMBLY OF ONTARIO

**SELECT COMMITTEE ON
ALTERNATIVE FUEL SOURCES**

Monday 18 February 2002

ASSEMBLÉE LÉGISLATIVE DE L'ONTARIO

**COMITÉ SPÉCIAL DES SOURCES
DE CARBURANTS DE REMPLACEMENT**

Lundi 18 février 2002

The committee met at 1003 in the Valhalla Inn, Thunder Bay.

WIND POWER TASK FORCE

ONTARIO WATERPOWER ASSOCIATION

The Chair (Mr Doug Galt): We'll call to order the select committee on alternative fuel sources. Thanks very much for attending and being here.

We look forward to our first presenter on the industry wind power task force, David Boileau, chair.

Mr O'Toole?

Interjection.

Mr John O'Toole (Durham): I'll recognize Lyn.

Mrs Lyn McLeod (Thunder Bay-Atikokan): I just wanted to take a minute of the committee's time to welcome you to Thunder Bay. We're delighted that you've come to Thunder Bay.

The Chair: Priorities first.

Mrs McLeod: Absolutely.

The Chair: Thank you very much. We look forward to our visit here.

Mrs McLeod: You're going to have a wonderful presentation because I know from many conversations with David that you are truly in the hands of the experts and that he has a very exciting report that has been tabled and made public. I have a little bit of a sense of the direction of the report, so I know you're going to find it a really informative morning.

I have to come and go a little bit. By pure coincidence, it happened to fall on the day that I had a little bit of personal media work that I have to do, so you'll understand if I come and go a bit—

The Chair: Well, not really, but—

Mrs McLeod: —but I do welcome you here.

The Chair: I'm halfway through his report and have been quite excited about it. It's neat stuff.

Mr O'Toole—are you interrupting Mr O'Toole's question, Mr Ouellette?

Mr Jerry J. Ouellette (Oshawa): I'd just like to congratulate the member for Thunder Bay-Atikokan on her years of dedication and the decision she's recently made. I know politics is very difficult for a lot of people. In this morning's paper we see an announcement from Lyn McLeod on her decision and I'd just like to congratulate her on her years well served as a member of the provincial Legislature.

Applause.

The Chair: My apologies, Ms McLeod. I missed the news this morning. I'm just picking up on it now. From the Chair, congratulations on a very exceptional career in politics going back to chair of school board—that's when I first met you—back in the late 1970s. We wish you the very best in all your future endeavours.

Mrs Marie Bountrogianni (Hamilton Mountain): Chair, I'd like to echo what everyone has said and also state that Lyn McLeod is the reason why I'm in politics. I first ran in 1995 because of Lyn.

The Chair: So she's the cause of all this?

Mrs Bountrogianni: She's a role model. Yes, she is. May I have a copy of the report, as well?

The Chair: Certainly.

Mr David Boileau: My apologies, Mr Chairman. There were copies—

Clerk of the Committee (Ms Tonia Grannum): Yes, distributed at Queen's Park. Maybe people didn't—

Mrs Bountrogianni: I was told I'd get a package here.

Clerk of the Committee: OK.

The Chair: Our researcher, Jerry Richmond, would just love to have one up here. That's probably the most important copy to have.

May I return to Mr O'Toole's concern, or should we just forge forward?

Mr O'Toole: I would also like to reiterate what has already been said about Mrs McLeod and thank her for her input and insights into debate.

But really, if we could recess for 10 to 15 minutes to allow Steve Gilchrist—I believe his flight was arriving at 10 o'clock. He's coming up this morning and since we're only having one presentation here and he's very interested in the issue, with the indulgence of the committee, I'd ask that we recess for 10 or 15 minutes.

The Chair: I'm at the pleasure of the committee. I think we do have some open time into the noon hour, but I'm at the pleasure of the committee.

Mr Boileau: Mr Chairman, the agenda is quite flexible. We have a bus for the whole day. We can delay lunch for a few minutes. That's certainly not a problem from our end. If we're going to have a brief recess, it might give me an opportunity to show you a little bit about wind resource, if anybody wants to do that. It's not part of the official program, but we could use that time wisely.

Mr O'Toole: Excellent.

The Chair: Is there any objection to taking a recess until 20 after, at the latest, or when Mr Gilchrist arrives, and then we'll proceed?

Mr O'Toole: That sounds good.

The Chair: OK. The committee stands recessed until 10:20 or until Mr Gilchrist arrives, whichever comes first.

The committee recessed from 1007 to 1020.

The Chair: It is now time to return, and I call to order the select committee on alternative fuel sources. My apologies for interrupting, but the recess was until 10:20 or until Mr Gilchrist arrived, whichever occurred first, and coincidentally both happened at the same time.

We will now proceed with the first presentation, the industry wind power task force, David Boileau, chair, and Paul Norris, president. We look forward to your presentation. We've set aside two hours in total for the presentation and for questions and comments from the three parties. You may use as much of that time as you like in presentation, and then whatever is left over will go to questions and comments from the different parties.

The time is yours.

Mr Paul Norris: Thank you very much, Dr Galt, and thanks to the committee for coming all the way to Thunder Bay. I came up last night and enjoyed the trip as well. David has been down to see me a number of times in Toronto or Peterborough, so I thought we'd return the favour. It does give us an important opportunity to talk about renewable energy and to focus in on some specific policy recommendations, so thank you very much for coming to Thunder Bay.

David and I have organized the discussion today, with your indulgence, into five separate items. We've also asked, through Lois, that a tour of Kakabeka Falls be conducted this afternoon. Ontario Power Generation's regional manager and their public relations people are going to join us. Our plan is to have that immediately after lunch and to be back here at approximately 3 o'clock. That's kind of the plan for the day.

I'll be speaking specifically to water power, obviously. I'm with the Ontario Waterpower Association. I was last at the committee on August 30, and hopefully you have a copy of the Hansard for that particular discussion. I don't intend to reiterate it.

The Chair: Maybe I should make a correction on that introduction, that you're the president of the Ontario Waterpower Association.

Mr Norris: That's correct.

The Chair: It might be confusing to Hansard the way I did introduce you earlier. My apologies for the interruption.

Mr Norris: Thank you, Dr Galt.

I'll give you a brief outline of what we want to try to achieve this morning. I'll offer a brief review of the Ontario Waterpower Association, and specifically on water power's role in renewable energy. Our focus today is to talk about a renewable energy strategy for the province of

Ontario. That's really what we want to get to, but we want to put some context around that.

David will present the Wind Power Task Force that has just been provided to you. I wouldn't worry about not having had an opportunity to read it. He'll go through it in some detail, I'm sure.

Out of that, we want to specifically focus on the renewables portfolio standard as a market-based mechanism. We've seen a number of depositions—certainly I've followed Hansard fairly closely—on this concept. We've seen it from everybody from Pollution Probe to Sierra Club to ourselves to the Wind Power Task Force to IPPSO. I think it's something worthy of having a separate discussion on, and again David will talk about that.

I wanted to talk a little bit—and David and I will kind of tag team on this—about wind and water synergies. There are a lot of new developments, new research and new science with respect to how best to plan water power development in the context of wind power development. If we're on the edge of a renewable strategy for the province, we should talk about those two things together, I think.

Finally, both David and I have provided and I'm hopeful that you have received written comment to the select committee's report on the areas specific to renewable energy; in my case on water power, and David has responded on wind power. I don't intend at this point to go through each of those recommendations. What I'd like to do is talk about the general policy themes that appear to me to have come out of them, and some of the response from our association and from David's perspective.

We plan to take that to about 11:30. I would propose that the committee choose to have a break after the Wind Power Task Force, if that's appropriate, because the renewables portfolio standard is quite a detailed discussion and I think we'd all like to come back with fresh minds on that.

As I suggested, we plan to have about half an hour at the end for questions and discussion focused on any areas at all, in the presentation or any others, and then we have a tour of Kakabeka Falls planned for this afternoon.

My presentation is going to be on water power, Ontario's renewable energy advantage. When I was last at the committee, I talked a little bit about Ontario's water power industry, and to some degree about our contribution to economic objectives.

We're going to go to Kakabeka Falls this afternoon. Kakabeka Falls was built in 1906. Water power, as I said in my last deposition, has been in Ontario for about 150 years. Until about 50 years ago, it was our only source of electricity. The facility we're going to be viewing this afternoon is I guess almost 100 years old. It's currently undergoing a capacity upgrade, and that's optimizing existing electricity. We'll talk a little bit more across the piece about how water power can do that.

Just before I go on, I'll be referring throughout the presentation to some of the work that's been done

internationally and some of the work that's been done in Canada. I reference the map that was put up; that was produced by Hydro-Québec. I've brought for the committee chair, the researchers and all three parties copies of the international report on hydro power and the environment, which is this report. I'll give you a copy of that, the map from Hydro-Québec and some economic and environmental analysis that Hydro-Québec has done with respect to water power. I can give those to you, and then I won't have to carry them around any more.

Briefly, I'll give an overview of Ontario's water power resources. I'll give you some idea of what we think the future contributions of water power are to renewable energy objectives. I want to talk a little bit about what I call the three Es. I've seen three Es used three or four different ways in front of this committee. I call them energy, economics and environmental attributes. Then I want to talk a little bit about the case for water power. It seems to me that a lot of discussion around green energy, renewable energy and the role of water power from a public policy perspective is fairly muddy. I simply want to make the case as to why water power has been and should continue to be part of the renewable energy strategy for the province.

Briefly, I made most of these points at the August presentation, but this is just one slide to remind you of what we're talking about here in the province. We have 8,150 megawatts of installed capacity in Ontario. That represents about 40 terawatt hours, and it's 26% of our energy supply. It's a fairly substantial component of Ontario's energy resources, and it's our primary source of renewable energy presently. To put that in some kind of context, Canada-wide, on average 64% of Canada's electricity needs comes from water power. That makes us about fifth in Canada, behind BC, Quebec, Manitoba, and Newfoundland and Labrador, with respect to the relative percentage of energy we get from renewable sources. That's important, because I think each of those jurisdictions, in the context of federal or national initiatives associated with air quality, are going to want to make their points around renewable energy and how much they get from renewable sources.

Mrs Bountrogianni: Sorry, which was number one?

Mr Norris: Quebec. I think the order is Quebec, BC, Manitoba, Labrador, ourselves.

We talk to some degree about the number of water power facilities in the province. We estimate there are just over 200 currently in the province. I made that point last time. The important point here is that fewer than half of those occupy crown land, so fewer than half of those actually provide resource royalties to the crown. The reason for that is a lot of those water power facilities used to be gristmills, used to provide other kinds of energy needs, and are on municipal land. So when we talk about 200 facilities in the province, we have to put that in some kind of context as well. We're not talking about 200 Kakabeka Falls and we're not talking about 200 Silver Falls, which we're going to today. There is a wide variety of water power facilities in the province.

We have a wide diversity of ownership in the province. The concept that OPG—yes, they're the biggest player from a capacity perspective. They have 85% or 88% of the capacity. But there are 60 individual owners out there, like Mr Boileau, Ottawa energy, Pembroke, Bracebridge and everybody else. There is a wide gamut of participants in the water power business in this province. It's a very diverse group.

Mr O'Toole: Chair, might I just ask a question to clarify on the way through?

The Chair: It's probably better to let the presentation be presented and then—

Mr O'Toole: Just a clarification, with the indulgence of the Chair. Are you feeding on to the grid today?

Mr Boileau: My company? Yes.

Mr O'Toole: So you're in partnership with OPG or whoever.

Mr Boileau: Great Lakes Power are my partners. We sell into the grid; originally into Ontario Hydro.

Mr O'Toole: Yes, that's right, through Ontario Hydro. Good.

Mr Norris: Just to pick up on the point on OPG dominance, OPG's dominance needs to be put in context as well, I think. We've already seen divestment of the Mississagi complex; that's 490 megawatts. There are also 200 megawatts on that system that probably won't be realized but which exist as undeveloped potential. That's the Patten Post system that was part of the economic development aspirations of the town of Elliot Lake at one point.

1030

When we talk about the dominance of OPG, we also have to recognize that we have a number of significant generators out there. We have Great Lakes Power, a significant generator. Algonquin is a significant player; they own a number of facilities. We have Abitibi, we have Inco, we have Domtar and we have Tembec as the industrials. Virtually all the municipalities are now part of the association, so it's everybody from Ottawa to Bracebridge to Peterborough. All of those have an economic advantage because of their water power.

We also have a number of private players. We have individuals who own 500-kilowatt facilities, we have individuals who own 10-megawatt facilities and a lot of new investors. We have people like Suncor, which has \$100 million in new investment in renewable energy and wants to invest in Ontario. We have some other strategic alliances in those kinds of organizations. We have First Nations which are interested in water power development.

I want to put future contributions in some kind of context as well. Depending on where you get your data from and what your source is and what they're counting—I think this is important. When we talk about there being 1,000 or 2,000 known in new developable potential in the province of Ontario—and that's a statement I made at the last discussion—our assessment, which was done in 1998-99, before market opening, was

that of that 1,000 to 2,000 megawatts, really only 200 to 300 megawatts was new development.

Even that new development was for feasibility studies that have already been done and environmental assessments that, to some degree, have already been undertaken. So that was known, realizable potential. We talk about redevelopment. We've already seen, for example, Ear Falls and High Falls in the Great Lakes Power situation. There's development in Bracebridge. People are reinvesting in the existing water power, and that's the largest single component of new potential that's known to be out there right now.

We're going to Kakabeka Falls this afternoon. They're doing an upgrade. There's 200 to 400 megawatts, in our estimation, across the industry in just upgrading existing equipment; so again, some context when we talk about 2,000 megawatts in new development.

There are a number of initiatives that have already been undertaken by the provincial government with respect to how water power can continue to contribute. In 1985, the Ministry of Natural Resources undertook to develop a database assessing the site potential across the province. Their estimations are that there are 2,700 megawatts of new potential in the province. Again, from an industry perspective we have serious reservations about whether that can be realized. But for sheer hydraulic potential and things like access to grid, that's their estimation.

The challenge with that existing database is that it is hugely inaccurate, it's nowhere near the sophistication of David's GIS technology and it doesn't include any attributes other than hydraulic attributes.

In the 1980s, the Ministry of Energy at that time undertook more than 200 feasibility studies across this province. It was called the small hydro reconnaissance and assessment program. The Ministry of Energy actually paid for site development potential. That database exists and we are currently reviewing its accuracy and bringing that up to date, so there is some potential there.

The real potential lies in the development of the Ministry of Natural Resources' allocation policy for new development. In the late 1980s, the allocation policy was basically a mining claim approach. We expect that to be changed. We have advocated that be changed to a request for proposal and that they don't necessarily focus on site specifics. They may want to focus on their own infrastructure, they may want to focus on optimizing existing managed systems or they may want to look at tertiary watersheds in a watershed context to see what the real developable potential is.

We know that there are First Nations' aspirations associated with water power. The only new developments that I'm aware of that are underway right now are on the White River; that's by the Pic Mobert First Nation. We know that Hydro One Remote is getting questions for remote community alternatives. I'm working with the Union of Ontario Indians on the creation of a First Nations' energy organization to consolidate their interests.

Some other context when we talk about energy: what's important to recognize with respect to water power—and the report touched on it to some degree in this notion of a life cycle analysis or full-cost accounting—is that from an energy perspective, water power is by far the most energy-efficient, cradle-to-grave, analytical energy producer. If you take the energy required to produce water power and the energy required to produce other forms of electricity, on a life cycle, full-cost accounting, cradle-to-grave analysis, I suggest it comes up head over heels in front of every other form of electricity.

I have a question there about the Wind Power Task Force because, with the new technologies and advancement in wind, I'm not sure what the number is but it's probably substantively more than it was, in May 2000 even.

Mr Boileau: If I could just comment on that, the Wind Power Task Force was analyzing the life cycle, because this is a very important point. Clearly, one of the reasons why water power is so far ahead is because it's got good capacity factors and the darn stuff lasts about 100 years. It can last indefinitely with reinvestment. The wind power statistics that we had dated back to 1998, when the availability and capacity factors and some of the siting issues hadn't properly been addressed. At that time, I think it was listed in at 20. I can't give you an accurate number on it right now, but it appears from other industry information we have that it's around 40 or 50, which would rank it second, effectively, depending on how we calculate the life cycle cost of nuclear.

This is a very important point that Paul is raising: life cycle analysis. Energy in equals energy out. So one unit of energy in and getting 150 units of energy out on water power is a huge thing. Wind power has come up an awful lot. It will never get close to water power but it will be the second best in that equation.

Mr Norris: Again, you can find that information in the document I provided to you. The international energy association published those statistics in its May 2000 report.

Mr O'Toole: With the indulgence of the Chair, this has been an issue—

The Chair: No, not until they have finished their presentation.

Mr O'Toole: It's almost too—

The Chair: No.

Mr O'Toole: Fine. I'll ask the question afterwards.

The Chair: Thank you.

Mr O'Toole: This is going to be a two-hour presentation, Mr Chair. With your indulgence—

The Chair: I know. Let them make their presentation and then ask your questions.

Mr O'Toole: Mr Chair, if I may, I'm not challenging the Chair. This is a fundamental issue, the life cycle cost issue. I will raise it afterwards, but we have two and a half hours. We have a full day with one presenter. I don't get your point. You are the Chair, so—

The Chair: The point is, we'll let them present and then we'll ask the questions.

Mr O'Toole: See you later.

Mr Norris: My second point on energy, and again it's contextual information, is that water power development across the province is strategically located. We have 70 plants in what we call northern Ontario and 130 in the south and east. There are a number of industrial-municipal advantages that are related directly to the location of water power. In the northwest part of the province almost every town or city is within a half-hour drive of a water power facility.

It's an indigenous supply. It's a made-in-Ontario solution. It's a secure supply. It offers energy attributes associated with voltage stabilization and it's there for Black Start support. Water power can start quickly and it can meet load demands and energy demands more quickly than any other source of energy. It also offers a built-in battery. It can meet peak demands. It can have synergy with wind. We can manage our reservoirs in a way that follows loads and we have enormous pump storage opportunities that have yet to be explored.

This is Silver Falls in Thunder Bay. This was built in 1959. It's a 43-megawatt facility. It's part of the complex that we're going to on the Kakabeka Falls system. Some 50 years later, Ontario Hydro thought it appropriate to optimize that system by building that facility. It's just another example of continued development of water power over the last 100 years.

The second E is economics. I wanted to remind you that relative to other resource industries in this province, water power is the single largest contributor to the consolidated revenue fund. MNR has estimated—and this is from the MNR socio-economic fact sheets—that mining is about \$65 million. Forestry averages between \$125 million to \$150 million—I should say that doesn't include the forest renewal fund; that's stumpage. Water power, particularly with the new 9.5% GRT, is going to average about \$150 million a year. It's the single largest source of resource royalties to the province.

All other energy sources are not indigenous. Even if they do occupy crown land, they are not assessed for their energy value. They don't contribute anything to the CSR from a resource royalty perspective.

I want to make a point about the contribution of new water power. I talked about 1,000 megawatts or 2,000 megawatts potentially. Bill 140 introduced a 9.5% gross receipts tax. If you do the math, I just want to point out that every new megawatt of water power that comes on is another \$22,000 to the consolidated revenue fund.

Briefly, other economic attributes: I wish to make some points on what we're worth. We've got \$1.6 billion in average annual revenue generation associated with water. That's at four cents a kilowatt hour. The infrastructure in the province with water power alone is estimated to be about \$15 billion. I talked about the individual owners, so we've got a wide variety of people who are in this business.

1040

To develop a new site today, development costs are around \$2 million per megawatt depending on the design,

but that's an industry average. So you're talking about 1,000 new megawatts or 2,000 new megawatts. We've seen \$100 million in redevelopment in this province since Bill 140 was announced. We've seen announcements in the northwest, in Ear Falls; in Sault Ste Marie, in High Falls; on the Trent-Severn where I am, in Peterborough; and most recently, in Bracebridge. It's largely related to the better business case being allowed to be made as a result of the levelling of the taxation playing field.

We should also recognize that any of the development we've seen in the last 15 years on 150 megawatts was all made-in-Ontario development. More than half of the new development was in northern Ontario and all the money that was spent was spent predominantly in northern Ontario, in this part of the province and across the north. So we have the infrastructure in Ontario to service this industry.

Mr O'Toole, this will make your point again when we come back to this. This again is on a full life cycle cost-accounting process, from an environmental perspective this time as opposed to an energy perspective, and I know you want to talk about the economic perspective. Again, my source is the document I've provided you with, the international energy association. What I've attempted to do is to pick out their Canada statistics. The summary report you have offers a wide range, and I don't think that's particularly helpful. Science continues to evolve in this area.

The point I want to make here, though, is that there are often discussions around the environmental attributes associated with reservoir-based water power versus non-reservoir-based water power. From an emissions perspective, they are practically the same. If that's your environmental context—and I'm the first to say that shouldn't be your only environmental context—if the discussion and the policy considerations are associated with emissions, these two are indistinguishable and any mechanism that discriminates against storage-based water power in the context of emissions is flawed.

I want to talk a little bit about where we're going with environmental attributes. As I said at the last meeting, we have a new business relationship, we are calling it, with the Ministry of Natural Resources. Mr Ouellette made a point last time which I think is worthy of raising again. What opening the electricity market means for this industry is that every facility in the province has to undertake a water management planning exercise with their local community and stakeholders that balances socio-economic and environmental attributes. That was felt to be predominantly the job of Ontario Hydro in the past, in the public policy mandate. That is now a legislative requirement in the Lakes and Rivers Improvement Act. The object of those exercises is ecological sustainability from the Ministry of Natural Resources' perspective, and from the industry's perspective for that matter.

I'm sorry that Mr Bradley isn't here but he made a point the last time around about environmental assess-

ment. The point about environmental assessment in the new electricity market is that every facility in the province that undergoes a significant redevelopment or any new development, regardless of whether you occupy crown land or not, is subject to environmental assessment. Previously that was not the case. Previously the Ministry of Natural Resources dealt with environmental assessment through an exemption order associated with disposition of rights to crown resources.

Our organization, working with the Canadian Environmental Assessment Agency, the Department of Fisheries and Oceans, the Ministry of Natural Resources and the Ministry of the Environment, is proposing to develop a class environmental assessment for water power modelled after the existing regulation but broadening the mandate to include the responsibilities of other agencies. EA, in and of itself, will not address environmental considerations.

We are also committed to new science and knowledge. The Ministry of Natural Resources, with ourselves involved, has just released a science strategy. The science strategy commits the ministry and the industry to long-term effectiveness monitoring of water power facilities in the province. We're in partnerships with the academic community and the Department of Fisheries and Oceans. The fundamental tenet around water power and the new reality is that we take an ecosystem approach to water management.

My personal view is that the water power program in Ontario will become the model for local citizen involvement in water management planning whether or not there's a water power facility in the province. Water power facilities account for fewer than 25% of the infrastructure on lakes and rivers in this province.

Next is the case for water power. Again, you'll find this in your report. This kind of ties it all together nicely, I thought. This is again out of the technical report, so I'm going to quote it specifically.

"The exceptional ancillary services provided by water power—reliability, power on demand, electricity available in a few minutes from a cold start, energy storage in reservoirs—make water power a possible producer of baseload, of peak load, of voltage and frequency regulation, of energy storage and of other services. These ancillary services are not always available with other power generation options. They must therefore be considered and integrated into the comparative analysis of electricity production options."

I think that ties it all together very nicely.

Finally, the case for water power really is that industry can deliver. If you have a renewable energy strategy in this province, our industry can make it happen. We certainly contribute to it. We had 150 megawatts in new development in response to Ontario Hydro's 1980s demand-supply projection. When they asked this industry to bring new development on-line, Mr Boileau and others did. We have significant new development already underway. It talked about Ear Falls, High Falls, Muskoka, Trent. We're going to see more than 60 new

megawatts just in redevelopment alone in the next year or so and \$100 million in new investment.

I think we have strong public support. I referenced in my submission last time, and I reiterate it this time, that consistently public opinion polls that are done in the context of environmental concerns associated with electricity generation support water power. International studies have been done. There was one done in 1999 across Canada by Environics. Most recently, there was one done in August 2001. There are environmental concerns, absolutely, but when you ask people to assess the relative merits of renewable generation, including water power, against others, consistently they support water power, provided it's developed in a socially responsible, environmentally considerate fashion.

The other thing that's going to make water power have strong public support is this water management planning concept. It's a public process. We're seeing it all across the province right now. On the Madawaska we've seen it, on the Michipicoten we're seeing it, on the Montreal River we're seeing it, in Abitibi. Local citizens' committees are getting around water management the same way they got around forest management, by actively involving themselves in decisions that affect their communities.

The biggest case for water power is that the model already exists. This isn't anything new. Government already has the model but it needs long-term commitment. We have a new business relationship with the Ministry of Natural Resources. That was put in place for a four-year time commitment, predominantly to deal with the opening of the market. It's a long-term requirement. Water management planning, new site development, all the things that are going to make a renewable energy strategy happen, are not going to go away in two, three or four years.

The biggest case we can make is that we have, and do offer and continue to offer, significant revenues to the province of Ontario through water power royalties. In the context again, if you were to do an analysis of the relative contribution of the forest industry and the relative government investment in the infrastructure associated bureaucratically with supporting that industry, you'd find a disparity. I'll leave it at that.

My final slide is Valerie Falls generating station. It was built in 1994 in Atikokan, Ontario, by my friend on the right. That will be my segue to Mr Boileau and the Ontario Wind Power Task Force. At the Chair's discretion I'll entertain questions, either now or at the end of the entire presentation.

The Chair: I need a clarification on your plan for the two hours. This has been water, then you have wind and then you want to talk about RPS?

Mr Norris: That's right.

The Chair: How much time would you like to set aside for each block? We're a half-hour now into the—

Mr Norris: I anticipated that mine was going to be 20, 25 minutes.

Mr Boileau: I think we're fine for half an hour at the end, Mr Chair.

The Chair: Do you want to take all questions at the end?

Mr Boileau: We can, although if there are points of clarification as we're going to through wind power—because there are a lot of areas of unfamiliarity—I don't mind making points of clarification, but I have a lot to cover.

The Chair: How would it be if I gave five minutes to each caucus and then we move on?

Mr Boileau: Yes.

The Chair: OK. Beginning with the official opposition.

Mrs Bountrogianni: Thank you for an excellent presentation. In the IEA report—and I actually made a visit to the IEA when I was in Europe in November. The considerations that are also in this book came up at that meeting, in this new era of globalization—not so new but at least newly labelled—and our responsibility for the less developed countries. Environmental assessments are different from country to country. Could you comment on that—in fact, the ethical considerations which are in this report and which I think you partly covered. I guess in Canada or in Ontario the ethical consideration of what the development of this type of energy does to poor rural areas.

1050

Mr Norris: It's an excellent point; I don't think you can paint a broad brush on environmental assessment. I think in fact the background studies to that report offer far greater generic observations with respect to the social implications of water power development with respect to including in assessment the natural flow regime, for example, of the existing river.

I would agree with the general direction that the more detailed report provides. It provides, I think, a fairly solid thought process, basically, for new development. It's not a prescription that says, "Here's how new development would happen," but it does offer some key considerations with respect to new development, and some of those, in the development of a class EA—the challenge with the existing environmental assessment process in the province is that it covers the whole sector. We know from experience in Ontario and across Canada in water power development that there are sector-specific issues that need to be resolved. We know that in water power development in this part of the province in the next 20 years, First Nations are going to be key partners or are at least going to be key to be involved in the development of new activities.

Our rationale for working on a class environmental assessment isn't that we need a different process. We could bring together the various legislative processes by working with the ministries. Our rationale is that it's the right thing to do, to involve those other stakeholders in the design of a process that ultimately is going to affect them. So I would agree that you can't paint all environmental assessment the same way, and we're hoping as an industry that this class EA approach gives us an opportunity to formally engage those other partners in the issues that are of consideration to them.

Mrs Bountrogianni: I would concur. Thank you.

The Chair: Mr O'Toole, and Mr Ouellette has also asked for some time.

Mr O'Toole: I'll pass, thank you.

Mr Ouellette: First of all, you mention about the life cycle, and for the water power it was 150 years. Is that one of the problems in that, making sure that upgrades are coming forward on a regular basis, because the life cycle of that particular facility is so long that we're not utilizing new technologies within the facility?

Mr Norris: There are two life cycle analyses. The life cycle analysis that's associated with energy payback is the relative energy in versus energy out. So if you had invested a unit of energy into the production of this, how much energy would you get out of it over the life of the facility?

In the life cycle analysis for the lifespan of a hydroelectric facility, it can, I would say, average 75 to 100 years. We're going to one today that's 100 years old. I think the business cases for reinvestment in the existing facilities are always made, and that's why I think you'll see, out of that 1,000 to 2,000 megawatts that could come on stream, that the companies that already have facilities are probably going to look to invest in making sure they optimize the energy they get out of their existing facilities.

Mr Ouellette: They haven't in the past?

Mr Norris: It's a continual process. It's going on at Niagara Falls right now.

Mr Boileau: Can I add to that a little bit? That's a really interesting point. If you can't make a business case for investment in an old plant that's running well and has reasonably good efficiencies, how do we trigger investment decisions that take advantage of capacity improvements and efficiency improvements?

Clearly when we get into renewable portfolio standards and the value of renewable energy credits, it's absolutely critical, if we're going to apply them to wind power as a renewable, that we also look at having some value for water power similar to that REC value for wind power, so that when you run through the business case, whether it's the Beck tunnel or Kakabeka Falls—I'll give you an example. Kakabeka Falls just spent \$21 million putting a new penstock in because the old one was rotting out. We're going to drive around it today. At the same time, there probably would have been a business case for redeveloping the turbines and getting 20% to 25% more power and energy out of that facility over the next 50 years, except that at the time a business case couldn't be made because the market price for power, for electricity, is four or 4.5 cents. If we added another 1.5 or two cents because of renewable energy credits, that project would have been done three or four years ago, at the same time that it was shut down.

One of the problems with redeveloping hydroelectric stations or water power stations is that it takes a long time to do it, so you lose that revenue stream while they're shut down. You need enough of an incentive, and we speak to that a lot today, Jerry, in our presentation.

Mr Ouellette: I know Mr Gilchrist has a question.

Mr Steve Gilchrist (Scarborough East): It's a fairly brief one, but one I'd like to think cuts to the heart of why we're up here today. We're certainly excited and pleased to hear of the developments not just within your association since we last met, but the application of your technology at sites across the province. But the committee is charged primarily with how we move beyond the status quo, and that would include decisions that have already been made, based on bills such as Bill 140.

You talk about 2,000 megawatts of potential power creation. To what extent will that be realized anyways in the current regime? To what extent would new developments—you talk about an MNR report done in 1985 that suggested 2,700 was a more reasonable upper limit. To what extent can we move that yardstick to help us as we search for a path that has a far more benign effect on the environment?

Mr Norris: I'll speak first to Bill 140. Bill 140 really fixed an inequity from a taxation perspective. With the exception of the existing 10-year holiday on new capacity that has long been in place by the Ministry of Natural Resources for water power royalties, it fundamentally just addressed a problem as opposed to providing a specific incentive.

When last we had water power development in this province—I guess a roundabout way to answering your question—between 1987 and 1993, Ontario Hydro was paying six to eight cents a kilowatt hour. We've got a four-cent kilowatt hour. Bill 140 isn't going to change the value of electricity; a renewable portfolio standard might. We think it's probably the best market-designed system to deal with the value of renewable energy credits. So the realization of that potential I think is very dependent on the value of renewable energy in the open market. If you can build something cheaper, why wouldn't you?

Mr Gilchrist: Let me abbreviate my question to something far pithier, then. Of the 2,000 that you've shown on this chart right now, what number of megawatts are coming on stream anyways, no matter what this committee does?

Mr Norris: A hundred right now.

Mr Gilchrist: I thought you suggested there's a number of other projects that are in the final stages of planning.

Mr Norris: No. I'll go back to that. The 200 megawatts of new development potential represents sites that have already gone through some kind of assessment. What the MNR database talks about is, in the 1970s and again in 1985 they did basically a hydraulic analysis of flow and head potential in the province based on extrapolations of drainage areas. We know there are a number of other influencing factors that affect the potential for water power development, not the least of which is access to transmission, forest cover, other hydrologic information, a lot of which has come leaps and bounds in the last 15 years from a GIS technology perspective.

So their estimate of 2,700 megawatts I don't have a great deal of confidence in unless we get to the same kind of stage as David's earlier presentation on knowing what the real wind resources out there—if we know what the real water resources are out there, we can have a better understanding of its potential. So there is no relationship generally between the 200 megawatts of new development and the 2,700 megawatts in MNR's database or the Ministry of Energy's 200 sites that they did assessments on in 1987 to 1989.

The Chair: Thank you very much.

We now need to move on to hear about wind. They tell us there's a lot around Queen's Park.

Mr Boileau: Well, Mr Chairman, I've been accused of having my share of it as well.

Welcome to the world of wind. Perhaps before I start, I'd like to give a more formal introduction of my assistant, Lois Chevrier.

The Chair: Do you have a similar handout?

Mr Boileau: I don't, Mr Chairman, because I did provide copies of the Wind Power Task Force report and I also did send a response to the interim report from the subcommittee.

The Chair: Thank you.

Mr Boileau: I should mention that I've been involved in the water power industry for a long time, and I think at the end of our presentation today you'll see why Paul and I decided to do a tag-team presentation here, because there are great synergies. The only difference between wind and water is the density.

In any event, I began in 1994 with the commissioning of a \$23-million hydroelectric project in Atikokan, a water power project called Valerie Falls. Over the years there were a number of areas of concern that I had with respect to the water power industry, and in 1998, with a number of other industry players like OPG and Inco and Great Lakes Power and Abitibi, formed a group called the Ontario Waterpower Task Force. Then a few years later, in late 2000, I got involved in the wind industry and again felt that there was a need to work with government. We formed, with other industry members, the Wind Power Task Force. I'll give you some more details on that.

The lady to my right, Lois Chevrier, was largely responsible for organizing both of those task forces and also saving us on the technical glitches that we run into and for putting together the very professional and well-organized packages that you have in front of you today, as well as the slides. So thank you, Lois.

1100

Mrs Lois Chevrier: Thank you.

Mr Boileau: This task force report was actually completed in October, but we had to do some consultation, so we'll jump right into the report. There's a fair bit of information to cover. I think you'll find it very interesting.

By the way, I want to thank the committee for coming to Thunder Bay. I've been to Toronto 73 times, I think was the count, for the Ontario Waterpower Task Force,

the formation of the Ontario Waterpower Association and the Ontario Wind Power Task Force, and I really appreciate you folks coming up here today.

Our outline is, wind, is it a real business or just more air? I saw an article once in the Economist that said, "Maybe this time," because wind has had a lot of promise over the years. Their question was, "Maybe this time?" I think the answer, clearly this committee knows, is yes. It's not just more air, and I'll give you some reasons why.

It's important—and we've spent a lot of time on it in our report, which a lot of reports don't do—to give some background to the average person so they understand some of the science and technology and developments behind the wind resource and wind energy development. We're going to talk about why we formed a task force and how it was structured. Again, I think it's important, when looking at the results of a report, to understand what the terms of reference of the report were. We're going to go through 15 key recommendations; one of them, the renewable portfolio standard, we're only going to touch on because we have a separate segment on that after the break, and then we'll summarize.

Just to start off, you may have all heard of the vision of the Canadian Wind Energy Association, CanWEA, 10X10, which is to install 10,000 megawatts of wind power capacity by 2010, thereby providing 5% of Canada's electricity from wind. This is equivalent to about 30 million megawatt hours of electricity per year based on current forecasts, sufficient to meet the electricity needs of nearly four million homes. That's a pretty significant number.

So, is wind just more air or a real energy alternative? Well, it's now the leading source of new renewable energy due to significant technical advances and better product reliability. It now has an availability, if the wind is there, of 97%. That means if the unit is available and the wind blows, it will produce electricity, whereas 20 years ago these things were broken down an awful lot and they had availability factors of around 25% or 30%, thereby proportionally increasing the costs of electricity generated. This is a huge advance. It's only second to water power, which I think has an availability, in new plants, of around 98%.

Advances in wind park siting and tower design are the biggest contributors. Back in around 1985 they had pretty well figured out how to get the energy out of it. Then they had to figure out how to get the towers higher in the air and how to make sure that they worked consistently.

There have been dramatic reductions in the price of turbines, installation and maintenance, and the reason for that is the old learning curve theory: if you double a product in the field, you reduce costs by 15%. If you make one car and it costs you \$100,000, if you make two, you reduce it by 15%. The only problem is that it gets more and more difficult to double the number of units in the field. Today, I think we have 30,000 or 40,000 turbines in the field in the world. If we go to 60,000, then we'll reduce our costs by 15%. So you can see that over time you're going to see some dramatic reductions. Part

of that reduction is siting and tower height. You're getting more energy out of each installation; you're getting into higher wind speeds.

There are rising electricity prices. Clearly, wind becomes more attractive if electricity prices rise.

There are increasing constraints on fossil generation. In other words, societies, industries and economies have to make choices, and if one of the choices is to have cleaner air, one of the tools to achieve that is to have caps on emissions. If you cap emissions, then money has to be spent to reduce the NO_x and SO_x emissions, pull mercury out of the air in the future, and there's also going to be a cost for CO₂ emissions. So these constraints are making it more attractive to look at other alternatives and offsets like wind and water power.

There are government incentive for renewables, again clearly reflecting government's policy priorities and the demand of the citizens for government to do something about air quality.

There are energy security concerns, the recognition of the benefits of the utilization of indigenous resources. We could say North America-wide that it would be nice to get off of Middle East oil, from a strategy standpoint. In Ontario, we might say it would be nice to get off of Alberta gas, Saskatchewan coal, Saskatchewan uranium or Pennsylvania coal; it would be nice.

Just a brief recap about what's in the world: Germany is clearly the leader, and not because they've got great wind. Their winds in fact are not very good; I think the average is around 6.7 or 6.8 metres per second. But they made a decision that they were going to try to establish 5% as a target for wind energy contributions to their total electricity mix. They did it with a feed-in tariff. I think they're now examining that and looking at other ways of achieving that objective.

Spain is coming on just gangbusters. There's a tremendous amount of investment there in a new manufacturing plant: blades, towers, turbines.

The USA, with the production tax credit, is the fastest-growing market right now, or pretty close; maybe Spain and the US are close together. The total is about 13,000 megawatts in the year 2000. That's probably up another 3,000 or 4,000 today. The forecast to the year 2005 is close to a tripling of that amount.

In Canada we lag, clearly. That's not necessarily because we're so far behind; it's just that we haven't had to make those choices. We have had abundant supplies of natural gas and water power in our country, and that has, by and large, taken up an awful lot of it. But we have kind of been sleeping at the switch in terms of paying attention to what's going on in the world. To a certain degree, that's reflected in the fact that we've got only 200 megawatts of capacity, and only four in Ontario.

So what are the big objections to wind power? We hear them all the time: "Yeah, but what are we going to do: turn the lights off when the wind stops blowing?" This is a very common, and unfair, criticism of wind. I think by the end of today you'll agree that it is absolutely irrelevant and meaningless. There is no source of elec-

tricity that has 100% capacity, 100% availability and/or 100% efficiency; it doesn't exist. Every one of them has different features. For example, wind has great efficiency in terms of capturing the available potential energy, and its availability is great; it's just that its capacity factor isn't that great.

Uranium—and we can talk about availability. I'm not going to spend all day talking about the availability of Pickering or the Bruce stations or the future availability of Darlington, but you can see that not only is the efficiency not that great in terms of heat conversion, but the availability, at 80%, is probably high, and the capacity factor is relatively low.

Coal has terrible efficiencies. Most of the heat goes up the stack or into a cooling loop. Its availability depends on the age, obviously, but that's an average, at 80%, and capacity factors.

I'm not going to go through each and every one of them. Natural gas, I guess, everybody assumes is a magic bullet that's going to save us all. Well, it's not that great either. The conversion efficiencies are poor. The availability is better because of modern technology and gas turbines. Capacity factors aren't that high. Water power is pretty strong on all fronts. Landfill gas is going to be in the range of what natural gas would be.

It's important to remember that there are no magic bullets. There is not a single source that's really, really dependable, with the exception of water power, and it has its challenges too, in terms of drought and seasonal pattern changes.

So no form of generation, to repeat, has 100% availability, efficiency or capacity factors. Modern wind turbines are capturing about 85% of the theoretically available energy. You can't get all of the energy out of the wind because, if you remember your old days with the pinwheel windmill, if you turned it directly into the wind, it would stall. The reason it stalls is because there's no movement of air behind the windmill. So you can't have 10 metres a second coming in and zero coming out, because it won't turn. So there's a balance point—it's called Betz's Law—that determines how much energy you can get out of the wind.

Our industry today is a mature industry, because we're getting about 85% of what we can theoretically get. It would be foolish for our company to invest money in an industry that was only 50% mature, in terms of technology. But now we're at 85% and approaching 86% or 87% maturity, in terms of the technology as far as being able to get it, and so now is a good time to start investing and putting some significant dollars into this industry.

It's true that wind doesn't generate in low winds or very high winds. You hear about some of these places out in BC where they have these tremendous winds. You know what? Projects will never go ahead there, because they'll be shut down during high wind periods; if they tried to operate, they'd blow right over. They have to default off and those blades have to pitch into the wind just like in a stall technology. High-high winds are no good and low-low winds are no good. What's Ontario

got? We've got medium-high winds. We've got some pretty good resource; we'll talk about that later. However, all the studies indicate that wind will generate some power more than 75% of the time. So if we go back and look at nuclear and we look at gas and we look at water power and look at all these other ones, there's some similarity there.

1110

Nuclear has some scheduled and unscheduled downtime. Coal only uses 33% of the energy. A lot of the waste heat goes up the stack and into cooling circuits and lakes and sometimes causes some problems.

Natural gas is an interesting one. Again, everybody focuses on natural gas being the magic bullet that's going to save Ontario. "We'll just convert all our coal plants to natural gas and that will be it." The reality is that the pricing of natural gas and the availability of natural gas are great unknowns. Another factor is that every time the price goes up, if you're a gas seller, you'll want to not produce electricity, you'd rather sell it for its heat value, so it gets removed from the grid. Unless you're tied into long-term contracts, which are going to be expensive and difficult to get, you're not going to be able to predict your production from your gas units. If you have short-term contracts, you're not going to be able to get financing to build these things. We hear a lot of talk about natural gas in Ontario, but tell me how many projects have actually broken ground right now. I'll tell you there are not very many, and the reason is that when you go to the bank, as I have lots of times for projects, you've got to have a long-term contract for gas. If you do, today, these guys are saying, "We want a big price for it."

Finally, with water power, rainfall varies season by season and year to year.

The point is that nothing is perfect, so what's wind got to offer?

There are some interesting things we found about Ontario winds, and it doesn't happen everywhere. We've got a unique situation. We've got a large, flat area over the Great Lakes. We've got a diurnal effect associated with the warming and the cooling of the air and the water, seasonally and daily. When we analyzed some historical data—the reason we were able to get some data on Ontario is that the US Army Corps of Engineers put up many hundreds of buoys around the Great Lakes and around the coastal areas of Canada to determine wave hind forecasting. The reason they wanted to do that was that after the Edmund Fitzgerald went down, and before the Edmund Fitzgerald went down, they wanted to have a good idea of what the relationship was between wind speeds and wave heights, and it had a lot to do with erosion and shipping. The consequence was that they gathered 30 years of data, from 1954 to 1984. We took those many millions of pieces of data, because it was every 10 minutes, and we ran them through a computer program to determine where the good wind speeds were in Ontario. We found not only that there were some interesting areas, but there was a high consistency to the

wind speeds across these areas. So wind, we think, is quite predictable.

There are some features of Ontario's resources that are really complementary to the wind energy industry. If we can find a way of predicting what wind can do and when it will do it, it enables the IMO and the pool and competitors, competing sources of electricity supply, to forecast what we're doing. In other words, would you say wind is intermittent if I could tell you 50 hours out exactly what the wind speeds and the wind energy production would be? It's not intermittent if you can predict it, because then you could fire up some gas units, you could fire up a coal unit, you could get a hot boiler ready to produce electricity. So if you can predict wind and you can predict the wind energy from it, that is almost 100% of what you need in order to bring it into the electricity mix.

So we looked at the summer wind speeds, and the purple line is your energy output from wind based on some historical trends in Ontario. I think we used the Goderich airport wind tower as a baseline. The dark blue line is the demand in Ontario in megawatts. You see over the 24 hours a rather interesting match-up between the output from the wind park and the demand in Ontario. The same thing happens in the next slide, which is January. It's a little bit more compressed, but you can see it there.

The other thing that's interesting is that a lot of people believe that Ontario is a summer-peaking jurisdiction. Occasionally, a summer peak does occur when you have low temperatures in the wintertime and high temperatures in the summer, but we're still a winter-peaking province, and IMO predicts it will be a winter-peaking province for the next eight to 10 years. So what do we have to have capacity for in Ontario? We have to have electricity-generating capacity to meet the load on the worst possible day. It's interesting that on the worst possible day, over the last 10 years in terms of demand in the wintertime, wind was producing almost three times what its normal production would be. Why is that? On a cold winter day it's windy—high wind speeds, cold temperature. A cubic metre of wind, or air, is more dense in the wintertime than in the summertime. So we'd get basically maximum production out of our wind turbine parks in Ontario, if there were some, on the days that we need it most, another good match-up for Ontario wind.

What about long-term? I talked about the US Army Corps of Engineers' analysis that we did. These were two sites, two buoys that we analyzed over a 30-year period, and you can see a very small variation in wind speeds. There are cycles where wind speeds are higher for a few years and lower for a few years. We're just on an upturn right now, hopefully, for 10 years or so; it would be very handy. So you can see consistency.

I talked just a few minutes ago about predictability. The company that we work with, AWS Scientific out of New York, is now selling forecasting programs to California and other states, including Texas, where wind energy is a big item, and they're selling for a big price,

every day, this graph, which they update on an hourly basis so that the individual companies and the state IMOs can forecast what the production is going to be from wind. On a hot summer day, air conditioning loads would depend very much on wind. So the utilities use this information (a) to determine what their load might be, but (b) to determine what the supply is. That's a graph that predicts 40 hours out. That's an old one, about a year and a half to two years old. They're now up around 60 hours out. The two items on the graph are what's observed and what was predicted. The observed was from a natural tower reading at a meteorological station called Wilkes-Barre in Pennsylvania, and the predicted is the prediction of this model that they have. Pretty good, eh? Even in the areas you see where there's a divergence, it's usually a divergence of hours, and that's all. Where you see wind predicted at a higher speed or where the observed speed was higher, it may have been just a slight anomaly in time over the prediction. But it's just an amazing tool.

We talked about predictability: if we can predict it, then it's not intermittent. If we can understand its features in terms of day, week, month, season, year and decade, that's great stuff, but what does that do for us in terms of cost? "How big is the gap?" everybody asks me. "What have we got to do to get this wind off the ground? How much do we have to pay? How much are electricity rates going to go up? What's going to happen to our industry?"

Let's look at costs. The biggest problem with costs is that everybody compares apples to oranges. They say, "Gee, you guys are telling us that wind power is going to cost six, seven or eight cents; the market price for power is 4.5 cents." That's true, the market price for power is 4.5 cents or somewhere around there, but what is the market price for power? That's power from Niagara Falls, it's power from some of the old coal plants, it's power from old, depreciated facilities that have low-cost production. Clearly, Niagara Falls is the cheapest place to develop water power in Ontario; Valerie Falls wasn't. The cost for developing a megawatt hour of power and getting a gigawatt hour of energy out of Niagara Falls is a lot lower than the new projects that have been developed, because all the good ones have been developed.

So in the case of looking at electricity costs, we can't compare a new capacity or a new megawatt today to one that was built 30, 40, 50 or 100 years ago. We have to compare apples to apples. If you ask me to go out and finance a gas-fired project today, I'll tell you I need to have about six cents to finance a gas-fired project today, at least, on average. We should be comparing not the 4.5 cents to what we need for wind but what the competitive costs of new generation are in this province. If we were to build a new nuclear plant or if we were to build a new coal plant, God forbid, or if we were to build a new water power plant, if the price of new capacity averages six or seven cents or five or six cents, then that's the gap we're looking for. That's an important point.

So I'm saying here that conventional new energy costs range from four cents to seven cents, depending on the

source, whether it's from gas, water, coal or nuclear. The forecast wind energy costs for developed markets, and this is a rather dated forecast but it was the one we had in our report, and for consistency we'll keep it: for 2004 we're looking at six cents; and for 2020, 3.69 cents. You might say, "Oh, hooray, we're going to be really, really lucky. By 2020 we will get all of our energy from wind and it will be cheaper than it is today." The reality is that over time, all electricity costs have gone down. That's reality. However, here we have a situation where wind costs are going to go down faster than the other costs, and some electricity prices may go up as a result of the need for society to address environmental issues and reduce emissions by putting in charges for emissions.

1120

But let's look at something that's fairly reasonable. Let's look at six cents in 2004 and five cents, roughly, in 2010. We are going to propose to you today an RPS that brings us to 2010. What we're saying is that this industry doesn't need a subsidy; it needs a market design and a market-based process that's going to provide some incentive. But it shouldn't be long-term; it should be a bridge incentive, not something that's going to prop this industry up at the expense of the ratepayer and the taxpayer or anybody else, or our industry.

What we're proposing here is a short-term bridge—eight years now—to 2010, at which time we should be competitive and able to stand on our own feet, not because of any other reason except technological advances, reduced costs, building up a critical mass, North American manufacturing, lower capital costs for projects, better siting etc.

What are the benefits of wind? A good mix of wind in the grid stabilizes power prices. That is a very commonly misunderstood thing. When you add more energy or electricity from different sources, it actually stabilizes the price because you're not held ransom to the price of gas. If, for example, all of our new capacity came from natural gas in the next 10 years and the price of natural gas went up, if 30% of our electricity is coming from gas, it's going to have a big impact. The fact that we have water power in Ontario at 25% or 26% is a great stabilizer on Ontario's electricity prices. The fact that we've got a pretty good mix of energy sources is a stabilizer. Adding one more isn't going to make it worse; it's going to make it better.

The capital cost of wind is high, but there are no fuel costs. I think that's a really important thing. It's nice to know that in water power and wind power we don't have to pay money out to Premier Klein out in Alberta for his heritage fund or to Saskatchewan or to these other places. We don't have a fuel cost. Now, the government may choose to tax, as they do with water power and royalties, but it's a made-in-Ontario thing. We're not leaking our tax dollars to the feds or royalties to other provinces. This is an important point for Ontarians.

It's a known resource and it's close to loads. Again, at one time I think what most people thought about wind was, "Well, it's up in the Hudson Bay and James Bay

areas. It's windy up there, but there's nothing down here." Not true. In fact, we never even considered Hudson Bay and James Bay as commercially viable options. There may be some local opportunities for First Nations and service to the communities, and in the long term there might be some strategies. What we looked at was commercial. "Commercial" means there are roads, there are people to fix them, there are transmission systems nearby, there is a wind resource that's good and there are areas where the competition for land isn't excessive and where we can get community support. That's what we meant by a wind resource close to loads.

It's modular—quick construction. In other words, what's the difference between building 20 towers and 50 towers? Well, you just keep going. If you have the wind resource and the land base, you can assemble these units at pretty well one a day. In fact, there are now self-erecting towers. If anybody wants to see it, I'll show you a little movie of that later: a self-erecting tower that not only puts itself up but also puts the turbine on top, with the blades, ready to go, in one day—eight hours. I've got a little movie on my computer. On our way to Kakabeka Falls, I'll show you.

A company called me the other day that is a partner with the BrasCan Great Lakes Power group. They're interested in looking at opportunities for manufacturing in Canada. Again, and this speaks to some of the items in our report, we need to build a critical mass. It isn't just generation and development of wind parks that we need; we need manufacturing, servicing. Our steel industry needs this. We could be the centre in North America for this. I'll talk about that a little later.

So the benefit of wind is that it supports Ontario's industrial heartland, steel-making, fabrication, electrical generators, transformer control equipment—things that Ontarians are good at. We did it for the water power industry. We're world leaders in water power. It's just too bad we didn't have more big water power projects to develop. We've largely exploited a lot of our commercially viable water power facilities. But we're good at this. Ontario is a great manufacturing area. The price of our dollar is good. Why should we be bringing towers and turbines in from Europe or the United States? Why shouldn't we be building them here?

Ontario's wind resource: why is wind speed so important? You're going to hear people say, "We should just build these things everywhere." The fact is, wind is like gold; it's hard to find. There's lots of mineralization around in Ontario, but there's very little ore in terms of mining. There's lots of wind around in Ontario, but there are very few areas where wind speed averages more than seven metres per second, long-term average. That's what you have to have; we think, commercially, more than that, probably 7.5.

Why is that so important? Wind has a special feature: it's the only energy source in the world, bar none, for which if you double the speed, you get eight times the power. If we doubled the amount of water power falling over a waterfall or going through a turbine, we'd only get

double the power. If we doubled the amount of uranium that we stuck into a reactor, we'd only get double the power, theoretically. The same thing with gas, all of them. Wind is different. If we go from seven metres per second to eight metres per second, we don't get a proportional relationship, we get a cubed value relationship. This is absolutely critical because it makes a big difference in the cost per unit of energy.

Let's take two examples. Location number 1: average wind speed of 6.7 metres per second annually will produce, per square kilometre of land, 11.65 billion watt-hours. Area B: just slightly more than one metre per second more, at 7.8; the actual increase in wind speed is only 16%, but the annual energy goes up to 18 billion watt-hours, a 55% increase in energy yield with only a 16% increase in wind speed. Which one would you rather develop, if you were a developer? Which one would you take to the bank and say, "Here's my cost"?

We have areas in Ontario that have lots of 7.8. We have areas in Ontario that have some 8.0—the cream, the gold, the ore. The Niagara wind streams that we want to find are here. The reason why they're "Niagara" wind streams, and why I use that comparison, is because that's truly what it is. There are Niagara wind streams up there. The reason we want those is because they, in many cases, will produce 100% more electricity than other sites, so their costs are going to be half. These are very important.

We believe that, from a commercial standpoint, wind speeds higher than seven metres per second, 25 kilometres per hour, are considered to have commercial value in North America. Which ones are going to get developed first? Not the seven. You're going to get the 7.5s, the 8.0s, the 8.1s, the 8.2s.

Classification system: there is an internationally developed classification system. I'm suggesting that everything up to seven in our climate today is not commercially viable. From seven to eight is commercially viable with tax and market incentives. I'd suggest to you that, since this graph came out, the 8.8 should probably be moved down to the bottom where it's just competitive with all other sources, period. It doesn't need any subsidies. I just wish we had more areas in Ontario that had that kind of wind speed.

Talking about resourcing, what have we got for resourcing? We've got the United States, which has done a lot of work on wind resourcing. In fact, on national and state programs, they have spent many, many tens of millions of dollars on understanding their resource; we haven't. We can catch up, though, as I indicated before during the break when we were looking at some of the modelling that has been done for Canada. By the way, British Columbia has done a MesoMap of their entire province.

This map indicates some pretty interesting features in the US. I told you before about Minnesota, where they put \$400 million worth of wind turbines in—real interesting. It's located right there. What's the wind speed there? It's a class 4, 7.0 to 7.5. I'd suggest to you that right where that is, it's more like 7.5 to 8.0.

What about Canada? It's pretty dark up here. I don't know if that's because the sun doesn't go that far, but I think it might be safe to say that, seeing how Ontario is on the other side of the Great Lakes, and we see that we've got some class 5 on the Great Lakes, clearly, I don't think the wind stops blowing at the border; it goes across. As I said before, we're on the right side of the lake, so we should certainly expect to see some class 4, lots of class 5 and some class 6 on the Canadian side. We know that as a fact, and we've shown you a little bit of what we've done in resourcing.

So what have we got? We've got 2,000 kilometres of coastline on the windy side of the Great Lakes and we have strong prevailing southwest winds. Our highland areas of the province also have good wind values. Our highlands are more extensive than what you think, particularly around the Sault Ste Marie and Lake Superior areas. Georgian Bay has some highland areas. There are some highland areas over by Ottawa, although those values are poor because they don't have the lake effect of high wind speeds.

Our studies indicate that there are about 1,500 square kilometres of commercial grade wind land in Ontario. What does "1,500 square kilometres" mean? At 0.2 kilometres per megawatt, that means there might be 7,500 megawatts of potential. The offshore resource is much larger. Commercial wind lands have seven-plus metres per second wind speeds. They should be close to transmission, roads and service.

1130

Coming back to this number here, 7,500, I should tell you that, like water power, not every wind site is going to get developed. There are some nice water power sites in Ontario that have higher and better use—canoeing, kayaking, tourism viewing, whatever it happens to be. Those projects probably shouldn't be developed for water power because there's a higher and better use. If you've got a nice community on a ridge line where people from Toronto have built \$300,000 cottages and you tell them that you're going to put up 50 wind towers on that ridge, you're changing an aspect of their lives that they've gotten used to, and I'm not suggesting that's going to happen. Unwise developers will pursue those developments. Where there's tight competition for land, they're going to run into problems. So this 7,500 megawatt figure in reality is probably closer to 1,500 or 2,000 for commercial lands that can be developed with good, strong community support.

So we're down to the Ontario Wind Power Task Force Initiative. Why do we have a task force? I'll relate a little bit of our experience as investors in Ontario. My partner, Great Lakes Power—I'm one of its partners on a water power facility as well as this wind initiative—has committed over \$250 million to new electricity generation projects in Ontario in 12 years. That's not a bad number. If it was General Motors, or Ford or whatever, announcing a \$50-million project, you'd have all kinds of people out there saying, "This is great." Quietly and behind the scenes, Great Lakes Power has put \$250 mil-

lion of investment into Ontario in new electricity generation projects. Most of the focus has been on water power; I would say close to \$170 million of that.

In 2000 we reviewed the \$400-million wind park development in Buffalo Ridge, Minnesota. Why did we do that? We're in the electricity generation business, we're in the renewable business. We see what's happening worldwide. We had to get caught up on what was going on with wind power; otherwise we're not doing the job we should for our shareholders. When we looked at it, it confirmed our view that, as a company, our corporate strategy had to include taking a lead role in promoting wind in our home province, Ontario, where the bulk of our investments are.

So in October we embarked on a wind resource program. You saw a little bit of that information earlier. We committed \$1.2 million to this effort just to see what was out there. One of the things we found, and it was a big concern to us, was that there was no regulatory regime for wind power in Ontario. It wasn't a surprise, but we wanted to confirm that there wasn't something or more information that we could find. We met with senior MNR and MEST staff to discuss task force prospects. One of the reasons why we did that is that we had such success working with the government on the water power task force that we wanted to build on that process.

In January, the bulk of the industry participants and the government ministries that we thought would be interested indicated a strong interest in exploring the potential for development of wind power as a significant renewable energy resource in Ontario. I have to tell you, this started before the select committee on alternative fuels because there was a strong interest on the government's part and a willingness to commit resources to it.

In April we had a kickoff meeting of the Ontario Wind Power Task Force in Toronto. Who were the participants? If we didn't have anybody there and it was just a bunch of guys in a backroom, then the credibility of this report would suffer. That's certainly not the case. Who was there? Ontario Power Generation; Great Lakes Power; my company, Seine River Power; Regional Power, a major investor in water power in Ontario; British Energy Canada, which had just recently signed the leases on the Bruce project and was working with OPG on the Huron wind project and certainly has an interest in positioning themselves for the Ontario market; Vision Quest Wind Electric—I think the committee has some familiarity with that company out in Alberta and now currently working in Ontario trying to develop some good wind power projects; Sky Generation; Probyn and Co; and Suncor. Those were the developers, marketers, financiers.

The manufacturers included the world's largest manufacturer, Vestas Wind; Blenkhorn and Sawle, a manufacturer in St Catharines; Steelcraft, a potential tower maker; and Wenver-Vergnet, a company that makes small turbines. In service and skills we had Zephyr North—we don't have a lot of depth in Ontario on

meteorological work for wind energy, and a fellow by the name of Jim Salmon, who is also the past president of CanWEA and I think a presenter to this committee, was just a tremendous asset to the task force—Acres International; and Brock University. The industry associations included CanWEA and IPPSO. So we had a good, broad cross-section of manufacturing, development, service, education and HRD.

Ministries: it's certainly important for us, obviously, to have MEST and MNR involved, MNR being the lead agency for crown land in the province, and MEST being very busy with Bill 35 and responsible for energy in the province. But we also included the Ministry of the Environment, the Ministry of Finance, which we had worked very closely with in the Waterpower Task Force, Economic Development and Trade with reference to the manufacturing opportunities, Northern Development and Mines because our company's backyard is Sault Ste Marie. Northern Development and Mines is keenly interested in seeing development in northern, northwestern and northeastern Ontario. Later in the task force process, OMAFRA was brought in because, as we discovered what the resources were and what the opportunities were, it became very clear to us that there was a large area in southwestern Ontario and some areas east of Toronto that were largely rural and agricultural areas that had good wind power potential—not great but good wind power potential. When we approached OMAFRA, they were absolutely fantastic in bringing in resources, assisting us and paying attention to our message. We have now established a very good relationship with them, and they made a great contribution to the task force effort.

The priority objectives of the task force were:

To identify investment climate required to attract private investment to the wind industry;

Quantify jobs and investment benefits in generation, manufacturing and services;

Provide the government with an industry perspective on renewable energy strategy for Ontario. Remember, this is an industry-led process. It was the industry that was making the recommendations and the government providing resources;

Quantify the emission reduction benefits from large-scale wind energy development;

Propose regulatory policies for wind power and determine the need and role for a lead agency for wind;

Clarify the magnitude of Ontario's wind resource, examine opportunities for industry/government cooperation to help Ontario catch up to the US and Europe on wind energy initiatives;

Provide the Ontario government with constructive recommendations that, if adopted, might help make Ontario a leader in wind energy. I'm not talking a leader in wind energy in Canada; I'm talking North America and I'm talking the world.

The merits of wind power were explored in a positive and constructive fashion, not at the expense of other fuels and sources of supply. That was one of the terms of reference. We weren't here to say all those other things

are bad and wind is great, so this is where we should go. We clearly recognized that there was a role for the assets that were already here that were paid for by the ratepayer and the need for wind to work with other supplies in the electricity mix to meet Ontario's energy, economic and environmental needs.

We had three subcommittees. One dealt with markets, taxation, incentives and regulation; another one dealt with wind resource assessment and land use policies; and a third one dealt with manufacturing and HRD issues. We completed our work, started in April. Our target was September 30. We had our last meeting on the 29th, and we produced our final report in October. So why didn't we bring it to the committee then and say, "Here's our wonderful report"? The reason was we started this task force before this committee was struck. We promised our government participants and our industry participants that we would consult up to the ministerial level at the seven ministries that were involved, and within the industries we also had chief executives who had to be aware of what was going on and what the recommendations were. We wanted to make sure that we had broad consensus and support for the items that the industry were recommending, and we did. We didn't have consensus exactly on every item, but they passed the eyeball test for everybody and that's the important thing.

I should mention to you we met with six of the seven deputy ministers within the ministries and four ministers, and we have several other meetings scheduled to complete that process. Everybody's agenda has been pretty busy of late. We also intend to bring the report to the two opposition leaders and we've made a request for meetings. We expect a positive answer on that. So if anything flows out of this select committee to the Legislature, we've built a level of understanding and knowledge about what the recommendations are, what the alternatives were and what was considered, so that if the government does end up bringing legislation forward, we think there will be broad consensus for what's proposed. That was the idea behind that process. It certainly worked for the water power association, bringing over \$100 million in new investment to Ontario. We think it will do more here.

Challenges, very briefly: credibility and recognition. The worst thing is that when you tell somebody you're in the wind power business, they roll their eyes at you, like, "Oh my God, where did you come from? You're in the wind power business." I used to do the same darned thing. I used to laugh at these guys at these conferences who said, "We're in the wind power business." I'd say, "What's the price of power?" "Twenty-five cents a kilowatt hour." I'd say, "See you next year." Next year it was 20 cents a kilowatt hour. "See you next year." When it got down to 10 cents a kilowatt hour, I figured we'd better pay attention; no more eye-rolling at wind. But I've been convinced, as many of you have as well, that generally a lot of legislators and public people and municipal politicians are going to roll their eyes: "Is this stuff for real?" So that was a challenge for us.

1140

Education, as you can see in this report, was a big part of our package. Government commitment? If people don't understand the technology, it's hard to get a commitment. That's only reasonable. So we had to do a job of educating. We've really tried to carry that forward in our effort, in terms of presenting it to various staff people in government and politicians.

Market opening: that's a challenge. People are distracted. The market is opening, so all the municipal utilities and MEST people and even environmental people, everybody is concerned about the implementation of market opening. It's hard to get their attention when that's happening, so that was a challenge for us, and we recognized that. In fact, in our presentation today I've changed the timelines on a couple of things because a lot of time has elapsed between October and today. Some of the recommendations we made in October said we should do this by such-and-such a date, and realistically it's not going to happen. So we've changed the timelines on a few of the recommendations.

The other challenge is the impact on environmental communities. You can't go into the province and say, "Gee, we're going to occupy 200 square kilometres of land in Ontario with wind parks." People are going to have a concern about this: aviation concerns, aesthetic concerns, noise concerns. There's an education process that has to happen and there are some trade-offs that have to happen with communities and other interests. So that's a challenge we have to deal with. Of course, you can't deal with them all in a six- or seven-month task force.

There are some schedule limitations. What are we going to deal with? Are we going to deal with Hudson Bay winds? No, because we don't have time to do that. Are we going to deal with small backyard rural 50-kilowatt units that are supposed to help run a dairy farm? Uh-uh, sorry, we don't have time for that. We were interested in large-scale wind park developments that will make a big difference on the environment, a big difference on the economy, a big difference in terms of public policy. That's what we were interested in.

This is just a nice picture so I could rest for a second. This is a picture from out west, actually, and a photo that was courtesy of Vision Quest Windelectric. We thought we'd put it in, but we would like to change the background so that it looks like the inland areas of Lake Superior or southwestern Ontario. We've got to get rid of these mountains and put an Ontario scene there.

Key recommendations: we're going to pound through these pretty fast, because you can read them at your leisure. There were three key recommendations that came out, 15 in total.

The renewable portfolio standard and the production tax credit are kind of lumped in together. As you know, the production tax credit is a dated recommendation, and I'll deal with that in some detail. But that was a key area. Why was it key? All of the other recommendations don't mean a darned thing—they're stranded—if we don't have a business case for investment in Ontario. So we can

have all nice tax incentives and holidays on royalties and all those other things, but we still have to go to the bank with a revenue stream.

Crown land use policies for wind and wind resourcing was another area of priority recommendations, because there are some very good wind assets, much like there are with water power, on crown lands, seeing that the crown owns 87% of the land in Ontario. It only makes sense that we develop a policy around that.

The third area of priority recommendation is, how do government and industry co-operate to build a critical mass for the wind business, and as I said before, not just for generation, but manufacturing and servicing? How do we work together, as we did for the Ontario Waterpower Association, as this government has done for other industries in fine fashion?

So recommendation 1(a), real quick: we want an 8% RPS and we want it by 2010. It should graduate over time so that there's time for capacity to come on-line and it doesn't create a scarcity and a run-up in the price of renewable energy credits. But 8% is a target by 2010. We'll show you later on in our RPS how we get that number, because it has to be realistic. It's a nice thing to trot it out, but can we deliver without causing a run-up in price?

Proposed timeline for action: we would like to see the government indicate a policy direction prior to market opening. In other words, government could say, "We think RPS is one of the tools that we would like to explore in greater detail." Subject to that detail being positive, we'd like to see some legislation and regulation for January 2003. We think that's doable. I just made a note here that we discuss that in greater detail later on.

Recommendation 1(b): what do we do in the interim? Should we just park this whole initiative and say, "OK, we'll just wait until we can deal with the RPS before we do anything for the wind industry"? In fact, the government could do something right now, much like many of the other provinces. Alberta, Saskatchewan and PEI together with the feds have adopted a procurement policy for purchases for government buildings and institutions. So until an RPS can be fully implemented, the Ontario government should adopt a renewable power procurement commitment for its own electricity needs using the same eligible renewable energy resource criteria recommended in the RPS rules. The timeline for action on that could be market opening. That would bridge us from now until the time that an RPS came in, and kick-start some investment in the wind industry, which we need to do right now.

Recommendation 2: this is a dated recommendation, but I think it's important to go through it in the context of what's happening in US jurisdictions. So what is a production tax credit? In the US, it's a federal tax incentive for wind energy that since 1995 has provided a tax credit in Canadian dollars of about 2.3 cents per kilowatt hour, tied to inflation, for every unit of qualifying energy. We were advocating that the federal government here adopt something along those lines.

What does a PTC do? It encourages investment in high capital cost generation like wind power. Unfortunately, the PTC legislation in the US expired in December. A two- to five-year extension is before Congress. We expect it to be passed once they get focused away from September 11 and some of the security concerns. When enacted, projects built in the qualifying period will receive a tax credit of 10 years.

The difficulty with the PTC in the US is that it's sometimes been termed a "fetch" bill. In other words, "Let's not pass the legislation for too long, because we can always use that to get political donations for the next election." In effect, what it's done is that it's been a roller-coaster ride for the US wind industry; it's boom, bust, boom, bust, boom, bust. That's been going on since enactment to renewals of the PTC. It's probably not the best way to go. The other problem with PTC is that it assumes you've got a taxable income. Most small developers and small entrepreneurs that get these industries going don't have a taxable income, because they're broke. They've got to go and borrow money to do this thing. So PTC isn't always the best.

Our recommendation in October said, "Following the acceptance of an Ontario-based RPS, the Ontario government should challenge the federal government to follow Ontario's lead by adopting a production tax credit for sustainable renewable energy production." So I was saying that Ontario should challenge the feds by bringing in an RPS, and the feds can respond by bringing in a PTC. Guess what, folks? They beat us. The federal government enacted earlier than expected, and this was a surprise to the industry; we had been lobbying for it at the federal level. But they have adopted a production incentive for wind in the December 2001 budget. So what's it all about?

"Canada adopts a production incentive for wind. The program will pay wind energy producers"—not water power producers, which I think is an oversight on their part—"a direct cash incentive of 1.2 cents per kilowatt hour for 10 years." Gee, that's not as good as the US one at 2.3 cents, right? Wrong, because it's a cash incentive. It's paid directly; it's not a tax credit. So it goes to everybody. I should point out that the incentive declines over time, so the first ones in presumably, once we see the final rules, will get 1.2 cents, and the ones that come in later on will get less. It makes sense, because our costs are supposed to be coming down, right? The guy or the company that goes in first should get the largest reward.

So it's not as large as the soon-to-come US PTC, but it does have some good features. It's a direct cash payment, not a tax credit, so small developers and companies that are not in a taxable position receive the same incentive as taxable corporations.

We have another benefit federally that all wind power projects qualify for the class 43 accelerated CCA rule, which is 30% depreciation on a declining balance. What does that mean? Most wind power projects would not be taxable typically for a period of seven to 10 years, because you can keep writing off your depreciation early

until it's all gone, so you're not in a taxable situation. So that 1.2 cents comes into your books as revenue, untaxed, basically, or tax-shielded, in the early years of the project, when your debt is highest.

Now, this may not sound all that important; we're here to talk about wind power projects. But if you can't finance the darned things, you don't have any wind power projects. This is a huge benefit to the wind industry in Ontario and to the government of Ontario. Why? Because it effectively reduces the burden that government or the ratepayer or the citizens have to pay to get renewable energy. The federal government has said, "We're going to take this share and we challenge the provinces to come back and do something." So the challenge is here.

1150

How does the production incentive help Ontario? It effectively reduces the cost of RPS credits by about 40%. It's hard for me to nail down because RPS credits are supposed to be market-based, but that's my estimate. It's based on a market price of power at 4.5 cents and a federal production incentive of 1.2. We've got some set-asides and probably some future carbon credits that will have a value of about half a cent, and if we stick a market value on the RPS tradable credits of 1.8 cents, we end up with eight cents. That's supposed to bring on 2,000 megawatts of investment in wind in Ontario.

What does this 1.2 do? As a relationship, 1.2 and 1.8 is three; divide three into 1.2, and you get about 40%. This is a big boost for us. This makes your decisions as a committee a lot easier, now that the feds have taken that out of the equation. It's really something to consider. It has made my job a lot easier because the impact on electricity rates in Ontario has significantly reduced as well. We'll talk about that when we get to RPS.

Crown land policies: we think the government should adopt a crown land disposition policy for wind energy development with the following features: we need crown leases for wind lands with long terms, so that when we go to the bank we've got 10 years' security for the area that we have. Water power is the same way; you can't finance a project on a five-year lease. You have to have long-term leases.

We suggest there should be a royalty holiday of 15 years. Water power gets 10. We're the poor cousins of water power. We think we should have an extra five years.

Land rental charges for wind parks should be at the general use rate applied to crown land in the area. What does that mean? If land as rental is charged as highest and best use, and its highest and best use is wind power, then the provincial policy currently says, "Well, then we should charge a high rate." I'm saying, as part of a renewable energy strategy for Ontario, that we should charge a rate for the land but it should be at the general use rate rather than a highest-and-best-use rate. That's a policy direction that has to come from government.

Proposed timeline for action: I have to tell you the industry is already well advanced in its discussions with

MNR. MNR has been a key to our work in both the water power industry and the wind power industry. We're already in a detailed review. They work very closely with the task force in providing information to us on crown land use policies and what they could do now to help kick-start an industry, and they're even considering interim arrangements so that we can get this industry off the ground. MNR is well advanced on this and we're going to continue to work with them.

Recommendation 4: government and industry co-operation to build a critical mass. "Critical mass" means that we actually have comprehensive business across manufacturing, servicing and generation. In order to have a whole Ontario-based wind industry, we need a business investment for climate and dealing with markets, regulations and incentives—that's on generation—but we also need a domestic supply of competitively priced, high-quality wind equipment and services.

Why should Vestas come over here and build a plant in Ontario if we've got four megawatts of installed capacity? You tell me. If we don't have domestic policies that encourage wind, we're not going to see manufacturers come here and set up in Ontario. The components of this critical mass are examined by subcommittee number three, manufacturing and HRD. The graph below illustrates the engineering jobs' impact of achieving the CanWEA 10X10 vision: 10,000 megawatts by 2010 in Canada. A similar spinoff in jobs and investment would apply to steelmaking, tower fabrication, the manufacture of turbine blades, electrical components, HRD and support activities.

Let's look at this graph just very briefly. Here's a number: new engineering jobs, 2,444 by 2010, based on this run-out. That's just engineering jobs. It doesn't talk about the steel industry, it doesn't talk about turbines, it doesn't talk about blades, of meeting that. What's the economic impact of 2,444 jobs? Read it in your report. It is huge.

We recommend that in order to achieve that building of a critical mass, a fifth centre of excellence be established and funded at an Ontario university or college to spearhead research and education on wind generation; that a government wind industry lead be established and resourced.

What does that mean? "We're going to appoint some guy over at the MNR. He's going to be the lead, and we'll give him \$25 a year to run this business." No, sir. We need a really powerful lead with a strong mandate from his minister to bring together all the various representatives from other ministries—we've listed seven of them here—and to bring together the industry, the educators and all these other groups that are going to make this go.

A wind industry lead has to be resourced. I think the number is a million dollars a year. It's not a big number. We're spending \$4 million a year in the water power industry to do water management planning. To get this off the ground, we don't have to spend a lot of money, but we have to spend some. We have to make an

investment in some department or ministry—I think it's MNR—as the natural agency for wind and renewable energy.

After consultation with the Ontario Wind Power Task Force, OWA, IPPSO, CanWEA and other stakeholders, government should develop a renewable energy strategy for Ontario. That's what we're talking about right here: a renewable energy strategy for Ontario. Paul talked about it; I'm talking about it. We need to have a formal renewable energy strategy. What's the objective? How are we going to get there? What are the tools that we need to get there? What are the resources? We discussed this a little bit more in the RPS. Actually, our whole presentation is really a discussion, a framework, for a renewable energy strategy for Ontario.

Other key recommendations: education and participation. Industry and government need to get more involved in trade shows. Sometimes I go to trade shows and there are no government people there. There should be. These are important trade shows. They're talking about technology. There are government people from other countries there. Our government has to get more involved in that, and so does our industry; we can't be sitting at home either. We have to spend some money.

This active engagement is one of the keys to encouraging Ontario investment. If you've got a guy who wants to invest in Ontario, and he's got a knowledgeable industry that's attending trade shows and listening to what's going on, he says, "This province is up. They're up to speed, they're interested, they're engaged." That's one of the recommendations.

This is just a small thing, but we should also do what Alberta has done and develop a wind information booklet for distribution. There's one in your report. Industry should pay part of it, MEST should pay part of it and MEDT or MNR. It's not a big deal. Everybody kicks in \$10,000 or \$20,000 or something and we'll do it. Let's get it out there. We should do that right away too.

Next, wind resourcing: I've said before that we shouldn't ask the government to spend a whole bunch of money on wind resourcing. You can if you want. You can spend millions of dollars, but you're going to be way behind. We should have five tall tower sites, maybe having a cost of about \$100,000 initially and maybe a maintenance cost of \$25,000 or \$30,000 a year. The data from those tall tower sites would be available to the public. That will encourage new entrants. It will help the IMO make forecasts of electricity coming from wind and also help market participants or competition understand where we're coming from.

Existing GIS data that are in the records that taxpayers have already paid for: if we want it now we have to pay for it, and in some cases it is pretty expensive. We think it should be made available at a nominal cost to this industry. It is in the US, it is in Europe, it is in most jurisdictions in the world, but in Canada, for a priority policy area, we have to detach the philosophy that it's user-pay and full cost recovery. The taxpayers have already paid for this. We want some benefits. Let's get

that information out to this wind industry and let's resource that GIS department so that they can give us answers fast. I want to know what the contours are on a mountain over by Sault Ste Marie. The next day, I get an e-mail from somebody at MNR that says, "That's what they are, and your price is \$25." No problem. That works.

Ontario needs to work with the federal government and give them a good, swift wake-up call that we've got an emerging industry on wind power development. If I build a 200-megawatt wind park and there are 200 towers there and there are 200 strobe lights on it, everybody within 100 miles is going to hate my guts. It will never get passed. Forget it, it's not going to happen. We've got global positioning systems in every little airplane in the world now. We don't need to have the same tower or lighting rules that we had 30 years ago. This thing is outdated. In fact, there are more bloody lights on in our skyline today that we don't need. We should get rid of half of these darn lights. With this emerging industry, with large numbers of high towers, we have to have a common sense approach to lighting. One or two lights on a 100-megawatt wind park—one at the beginning and one at the end—is fine. The navigation community has many tools to work with in terms of dealing with hazards, and there are lots of buildings, trees, hills and everything else. A hundred metres up in the air shouldn't be a problem for these guys if there's a minimum amount of lighting.

We also need to carry on offshore wind resource assessment of the Great Lakes, with particular emphasis on Lake Erie. It's not competitive right now but it could be in the future. We have a tremendous wind resource on Lake Erie. It depends on what the competition for those waters is. We're leasing out options on gas lands underneath the Great Lakes now; we should investigate what our wind resource is, what the foundations are and what the ice conditions are in the wintertime so that we can prepare for the possibility of large-scale development on lands or waters in an environmentally sustainable fashion.

1200

Recommendation 7, farming the wind: what are the benefits to the farm community and to the rural community? Let's understand that. We're working with OMAFRA now on that and there are a number of very good reports out.

Recommendation 8, environmental assessment: we think that the government should consider raising the screening threshold for wind for an EA from two to 10 megawatts, although—I have to be honest with the committee—I don't personally have a problem with the screening of any project. If the policy direction from the government says that wind development is a priority and the screening is well done, it's up to the developer to build community support for his project; that's his responsibility. So I don't have a problem with this number. Sure, it would be nice if it was higher, but ultimately, if you're going to put a 100-metre tower up in the middle of

a city, you're going to be into some controversy—bylaws, whatever.

Recommendation 9, set-aside for renewables: I think the government has done a pretty good job in responding to the industry's need to have a set-aside for renewables and the number that they've picked isn't too bad. I think it's low. Certainly it should reflect the government's objectives and society's objectives in terms of emission reductions, but the percentage that's available to us, the renewable industry, should graduate with an RPS. So if we ask for a 1% RPS in 2002 and we go to an 8% RPS in 2010, by 2010 the set-aside for renewables should probably be higher than 2% or 3%.

Recommendation 10, property assessment: it pretty near killed the water power industry; an absolutely terrible disaster. This government recognized that and changed the method of assessment, as Paul mentioned, and levelled the playing field with other sources. We've got a brand new industry starting in this province. We don't want to have a situation where wind towers receive some kind of arbitrary assessed value that discourages investment. At the same time, we recognize that municipalities have to have a revenue stream from these, otherwise you're going to strand their interest or alienate their interest in having wind park development in their areas. We're saying, let's do what other jurisdictions are doing: a reasonable assessed value—\$20,000 to \$30,000 per megawatt—and depending on your mill rate in different jurisdictions, it would yield between \$2,000 to \$5,000 per year per tower. That's not a bad number. It's reasonable. It's not much different from what you might get from two or three houses.

This rate is similar to Alberta. We should have some action on that right away because some of us are bringing draft financing projects to our financiers now. They want to know what is the regime for taxation.

Recommendation 11: we should look at the wind and water power integration synergies. We'll talk about that a little bit later. One of the reasons why Paul and I are here today doing this tag-team presentation is there are huge synergies between water power and wind power, and one brings value to the other. We've got to look at policies that are going to incent investment in energy storage, reservoirs and pump storage.

I just mentioned that we will be talking about this in a little article or presentation entitled "Are Hydro and Wind Friends," and of course the answer is yes.

Recommendation 12, distributed generation and DRC exemption: where practical and safe—and there are some challenges here—distributed generation or net metering generation should be allowed, certainly, and encouraged. Perhaps small generators, self-generators—an industry in southwestern Ontario, a tomato factory or whatever—if they want to put up on their farm a wind tower and sell their power to themselves or consume their power themselves, perhaps there should be some consideration, because of the environmental benefits of doing that, to exempt them from the DRC. We've suggested a figure of less than five megawatts. The reason is that everybody

has to pay for an electricity system that's here now, and the debt, and we can't have everybody jumping off the bandwagon. But I think it's reasonable to have small self-generators that are producing renewable energy exempt for their production if it's under five megs.

Recommendation 13, capital taxes and provincial sales taxes: this government is certainly moving away from capital taxes, to their credit. This renewable industry, whether it's water power or wind power, is just killed by capital taxes, because we put all our capital up in year one. Our operating costs are low. All our capital goes in in year one and we pay a capital tax every year. The government has already indicated they're moving away from capital taxes. We think that, as part of a renewable energy strategy, they could take a special course of action and exempt wind power projects from capital taxes. It should probably be applied to new water power projects as well.

And we should be exempt from PST. We do it for logging equipment. We do it for a hundred different things. We've got all these exemptions from PST. You can go through the list; they're all there. We've got a new industry here. At least for the period to 2010, we should, as part of a renewable energy strategy, exempt all of the purchases and all the operating phase charges that would normally have PST applied to them.

Recommendation 14, building community support: this is kind of important. I think we need to work with the industry and government needs to work with municipal councils on education. We have to objectively address issues surrounding wind energy, like noise, aesthetics, bird kills. These are items that are not well understood. We have to make sure that the property tax rates aren't so small that, as I said before, we alienate the municipalities. What's in it for us? Nothing. Why do we even want to talk to you? The wind industry should be a win-win, a win for the environment and a win for the local community in terms of tax revenues.

We are not asking the government to bring in standard bylaws for special setbacks and zoning rules. The reason for that is, we think the industry, the developers, should be talented enough to go and build a trust relationship with each community and address each community's concerns. It's not the role of government to go and say, "We're going to put wind power in. It doesn't matter what you guys like." We're developers. I grew up in the water power industry and I'll tell you, it's tough to get a community behind a project, but it can be done. It can be done by listening to what the needs are and addressing them. Those developers who don't address them always get into trouble and their projects don't proceed, as they should not proceed.

Recommendation 15, transmission issues: a big issue and your committee is not going to have time to look at this, but we need to look at the system layout, capacity and the connection issues to determine what the opportunities are for wind power. Although I am only calling this a key recommendation, not a priority recommendation, really, this is a big issue. As part of a renew-

able energy strategy, the government needs to consider the role of policy direction on the improvement of the grid to areas of the province where potential new renewable generation is stranded due to the lack of transmission capacity.

What does that mean? Well, I'll tell you what it means. We've got up in the Mattagami area about 400 megawatts of new capacity that could be developed that won't go ahead because we don't have enough transmission lines. In northwestern Ontario, where we're sitting here today, we couldn't put another 100 megawatts on this system because we don't have the connection to southern Ontario or to Manitoba or to Minnesota. Manitoba doesn't want our power; they've got lots. Minnesota, we don't have a big enough connection. So that area I showed you before where there was a potential for development, forget it. Nobody's going to look at it.

Is there a role for government to give policy direction to the Ontario Energy Board, saying, "You guys need to consider in your transmission rate structure incentives for bringing more grid capacity to certain areas"? I guess I would say, "Yeah, that's right," because you can't expect the generator to build a 500-kilovolt line from Mattagami down to Toronto. He's not going to be able to make a business case. That's why some of these things have not gone forward. So there is a role here for renewable energy strategy development to look at this issue. Transmission, connection, capacity constraints are very important, particularly for northern Ontario.

What do we get out of all these wonderful things? After you go to the Legislature and adopt all of our recommendations and flog them in, what are the deliverables? Immediately, you're going to get about \$10 million to \$40 million in resource identification and predevelopment investment, just to find out what's out there, to go and get options, to do all of the surveys and work with communities and environmental assessments. But more importantly, over time, it will provide in Ontario a secured climate for investment in up to 3,000 megawatts of wind energy, which is 30% of CanWEA's 10,000 megawatts by 2010, and it represents an investment of \$4.5 billion. So should Ontario go after 30% of CanWEA's 10X10? Sure, why not? We're 30% of the population in Canada, the richest province in Canada and the province with a big issue on emissions, not only caused by Ontario but by other areas. We have to take the lead in North America, I think.

In eight years, deliver 3,000 megawatts of low-impact renewable energy to help Ontario meet its energy needs and emission reduction targets, and that clearly includes water power, and provide a long-term revenue stream to the crown and communities from the sustainable use of Ontario's indigenous, renewable energy resources and promote local and regional job growth.

Summary: wind power is making an important and growing contribution to the energy supply and environmental and economic goals of such countries as Denmark, Germany, Spain and the US. Wind power has

the potential to do the same in Ontario with the right combination of industry and government incentives.

Ontario's got a good wind resource, a strong industrial base and a skilled workforce. We need to expand that skilled workforce a bit. Our electrical needs are growing and new export markets are opening. "Oh, gee, we don't want to export our renewable energy." Well, why not? What if we did have a really big expansion of renewable energy in Ontario and we sold power to Michigan, Wisconsin and New York, areas where a lot of the generation is coming from fossil fuels? Who is that going to help? Go figure. Ontario, big time. So we shouldn't be just looking at what can happen in Ontario; we should be looking at the opportunities for improving the air quality in this part of North America.

I'm sorry. Go back one, Lois.

Clearly, there's a need to address air quality issues related to electricity generation.

In summary, in the design of the Wind Power Task Force recommendations, industry recognized that wind is not a magic bullet; it must work with other generation sources. New policies for wind must not strand existing generation assets. I'm a firm believer in that, and there's no need to. You'll see a little bit later when we get into the RPS percentages why.

It should have a neutral or marginal impact on electricity prices. We don't advocate that Ontario turn around and say, "OK. We're going to be the champs. We'll be the leaders in North America, and our industry's going to pay two cents a kilowatt more for power than anywhere else." Forget it. That's a non-flyer. We think it should be neutral or marginal. By "marginal," I mean less than a 2% impact on electricity rates.

It must have a significant and measurable impact on Ontario's clean air objectives. What's the point of this whole game if we propose an 8% RPS and it doesn't do anything to the air quality of this province? We're going to show you in the RPS discussion exactly what it does.

It must increase the energy security and build jobs and investment in Ontario.

Industry also recognizes that there is an ongoing need to work with government to provide advice on policy implementation. We've shown what we would do in the water power business, and I think that has worked well.

In addition to that, we also have to work with government to address the needs of other stakeholders.

We hope the select committee will consider the Wind Power Task Force report as a key source for developing your final recommendations. We're at your disposal. If you need additional information or if you'd like to meet with us again prior to the development of your recommendations, we're certainly at your disposal.

We're going to be doing, as I said before, a presentation on renewables portfolio standards and wind-water power synergies.

Lastly, the committee does have a number of extra copies of the report in Toronto, also a CD, so you can reproduce the entire report. If anybody wants, we're going to be posting the text portion of the report on these

sites and I think also on my partner's site at Great Lakes Power. The entire report is available on CD for a price of—what? What should it be? We haven't determined it.

Anyway, that is the Wind Power Task Force report. Thank you for your patience in listening to this windy part of your session today.

The Chair: Thank you very much for a very, very extensive report on wind energy.

Just before we discuss with the committee where we go from here, there are seven minutes left in the two hours. Research has requested a copy of your presentation, the condensed form of the report that you were presenting to us.

I'm looking to the committee for direction. You want some time for an RPS presentation. There are also questions and statements I'm sure some of the committee members want to make, but we have seven minutes left in the two hours. I'm at your pleasure.

Mr Gilchrist: I'm sure I speak for our side. We're more than happy to extend the time. This is, after all, presumably the most comprehensive analysis we've seen for the entire wind industry and water industry. So in that regard, plus the fact that we're not exactly under any time constraints for the next group, there not being one, at your discretion you extend it as long as—

The Chair: May I make a suggestion? I would suggest that we take a 15-minute break—I see sandwiches at the back—we return to the table, have 10 minutes for each caucus on questions and statements on what's been presented, and we then go into a half-hour for RPS, unless that gets us in trouble with the tour. Would that be in order?

Mr Boileau: Mr Chairman, it doesn't get us into trouble with the tour. We just have to advise them that we're a little bit delayed.

The Chair: It's now almost 12:15. How about we recess until 12:30? We'll reconvene for 10 minutes for each caucus to ask questions and statements on what's been presented. That will take us to about 10 to 1. We then go into a half-hour for the second presentation and recess at 1:20. Is that in order? Hearing no objections, the committee now stands recessed until 12:30.

The committee recessed from 1214 to 1234.

The Chair: The recess has been slightly longer than originally planned, but all the committee is back who are here in Thunder Bay and we'll reconvene at this point. We'll turn to questions from the government side. Who would like to start? Mr Ouellette.

Mr Ouellette: The figures that we show for water generation indicate—when you talk to people from Hydro or from MNR, what sorts of flow rates and drop rates do you require in order to generate hydro now?

Mr Boileau: I'm a developer, so I'll tell you, Jerry: the straight answer is that energy from falling water is directly proportional to the head times the flow times the accelerational gravity times efficiency. So if you have low head and/or low flow, you're going to have big dollars in capital to put the structures in to channel the water.

Mr Ouellette: Ontario Hydro specifically said they needed 15 feet of drop, but I don't remember specifically what the volume of water is to go with that.

Mr Boileau: It all comes down to the economics. If you have low head, you have to have a very large machine to capture the volume of water, so low head typically means you've got very high volumes.

For example, the facility on the St Marys River at Sault Ste Marie I believe has an 18- to 20-foot drop, but it's flowing all the water of Lake Superior. That particular project, if you can see the size of the penstocks and the volume of water and the huge concrete structures required to capture it, the only thing that makes that one go with the low head of 18 feet is the very high volumes. For example, if you had a river that was an average river—I'm trying to think of an example. Even in the Trent system, if you had a head of 10 feet, it would be very difficult to make a business case for investment. You might be able to do it on a 15- or 20-foot one if the existing structures are already there, there's a dam and all you're doing is adding a powerhouse to the site. Low-head projects work in an environment where we have 15-cent electricity. They don't work in an environment where we have six-cent or seven-cent electricity.

Mr Ouellette: The technology hasn't increased the—

Mr Boileau: You can't get any more power out of the water. It's a straight formula, head times flow times 9.81 times 0.9. If you cut the head in half, then you're going to get half the power; if you cut the flow in half, you're going to get half the power—just a simple formula.

Mr Norris: When MNR analyzed, for example, their information with respect to water power potential in the province in their existing database, I believe they used a figure of three metres and under as having low potential—they didn't even use flow—three to 10 metres as having moderate potential, and over 10 metres as having significant potential in the context of resource management planning.

There are a number of technologies or there is some work that's been going on with respect to retrofitting existing capital infrastructure that may have some potential to alleviate some of that problem, but that goes back to David's point about the initial capital investment as part of the problem related to head and flow. Where you may see innovations applied is where MNR has 325 dams. If you can make some of those produce water power without a huge new investment in capital infrastructure, there may be some possibilities.

Mr Ouellette: Out of those 325, do you have any figures that indicate which ones would have potential and which—

Mr Norris: I know they have looked in the past and continue to look at their infrastructure management strategy generally and dam management specifically, because obviously it's costing MNR money to maintain those structures. Every intention I've seen is to have a formal regulation introduced for dam safety in Ontario like Quebec has done or like BC has done, but they have looked at divestment opportunities. Cordova is the one I

mentioned before, where they divested that infrastructure, and the Deer Lake fish hatchery now produces water power and it can still provide water to the fish hatchery. So they could and so could municipalities.

Mr Boileau: Just to expand on that, Jerry, the cost of doing an environmental assessment and the engineering for a small project in a lot of cases is exactly the same as for a large project. Those that are marginal, because of those other overhead costs, engineering, project management and environmental assessment, are a tough go. The really big ones that are going to hit Ontario are going to be the variety of the Beck tunnel developments, the Mattagami complex and the redevelopment of existing facilities.

Mr Ouellette: We have 325 dams not being utilized currently, if there's some way we can utilize them rather than developing new structures. When you put a new structure in like Bark Lake, it certainly has a lot of impact on what takes place in that whole ecosystem.

Mr Boileau: Every one of those structures was available during the late 1980s and 1990s. Of the several hundred applications that came to the crown for water power development on existing facilities and on new facilities, I think only about 15 or 20 actually moved ahead to development, at a price of six to six and a half cents per kilowatt hour. Those are the better ones. Now, if we're going to default to the ones that were not as attractive, we clearly would have to have a price in the 7.5% to 8% range in order to attract that. We don't have that in the market. That's one of the reasons we're saying that water power requires an equitable treatment within RPS and within other incentives, just like wind power, in order to get it off the ground.

1240

Mr Ouellette: There haven't been advances in technology as there have been in wind?

Mr Boileau: Since 1899, the efficiency of water turbines has only improved by about 5%—1899, 100 years. What we have improved is the control technology for head that changes and flows that change; in other words, being able to stay on top of the efficiency curve. Water power largely was perfected in the 1800s.

Mr Gilchrist: Given the success of the water power and the wind power task force, would you recommend to this committee that the steps be taken to create a solar power task force and perhaps even a biofuels task force?

Mr Boileau: I think that would all fall under a renewable energy strategy. Certainly we have the OWA and a new business relationship with government. Clearly there's an opportunity for IPPSO, through a branch called the wind power group or whatever, to have a new business relationship with the government. Who are they going to have a business relationship with, with a renewal energy group? It should be looking at all the changing technologies. I related to you my story about how I was a skeptic about wind. So I would look very interestingly at anybody who would say that solar power doesn't have a future, because technological changes in our society are making old, non-viable projects viable.

The cost decreases in solar are quite substantial, but it's still probably five or 10 years out.

But certainly we don't want to get caught, like we have with wind power, not knowing what's going on in terms of technology development, and that is why we recommended a lead agency for wind. But there's no reason why that couldn't be a lead agency for renewables. Clearly we're already partway there with MNR. They've already been working with the industry and with other stakeholders on a renewable strategy.

Mr Gilchrist: You mention the GIS information. Is it your understanding that we have comprehensive wind mapping of the province of Ontario today?

Mr Boileau: No, you have comprehensive GIS data on parks, contours, forests, infrastructure. In fact, we've bought a lot of the information and we've been working with MNR on data swaps, considering swapping wind resourcing for their information. MNR has been very cooperative and I think is looking at its policies and looking for policy direction as well from the government on renewable energy strategy. Some of that information was incorporated in this wind map process that we've talked about, and it has come from the Ontario data source, which is quite extensive. Ontario has done a good job on gathering GIS data, but not for wind.

Mr Gilchrist: But not for wind.

Interjection: Or for water.

Mr Gilchrist: The last question I had related to an issue that's taking place down in Prince Edward—well, it's not “county” any more; the municipality of Prince Edward—the siting, as you know, of a reasonably sized windmill farm. In your presentation you suggested a common approach to approvals and the environmental assessment treatment of wind farms. What role do you see the municipalities playing in terms of the specific application, the traditional site plan approval that has always been a power municipalities have enjoyed?

Mr Boileau: I'm a real advocate of building local trust and respect between a developer and a community. I know that particular project you have in mind and I'm quite confident that developer will be able to bring forward a win-win type of development. That doesn't mean there aren't going to be trade-offs. If you've got a house and you look out over a field and you haven't seen a communication tower, you're probably going to have some concerns about seeing a communication tower. I think the company pursuing that development certainly has a fine example of the projects they have out in Alberta. We advocate bringing councillors and mayors from different communities, and stakeholders who might have an objection to a project, to projects that are already operating. There are a number in New York; there are the ones that we mentioned in Minnesota.

Mr Gilchrist: What a scandalous thought: actually going and travelling to see things in person. Outrageous.

Mr Boileau: It's a must. This committee knows the value of that, because I think you guys and ladies have seen some tremendously interesting technologies and opportunities develop out of your travels, so I encourage

that. But I don't think that we want to have the province forcing municipalities to adopt a standard set of bylaws. We're developers. We're supposed to know how to deal with people. Communities have different interests. One of the things we can do, though, is we can educate. We can work and educate people, give them information and facts.

Mr Gilchrist: I guess I should say, because Hansard doesn't pick up inflections, my tongue was firmly lodged in my cheek in that last interjection. Thank you for your answer.

The Chair: We've come to the 10-minute point. Dr Bountrogianni.

Mrs Bountrogianni: First of all, thank you for an excellent presentation and excellent documentation. It was wonderful, extremely effective communication. You instill confidence in whomever is listening to you both.

You mentioned centres of excellence. Maybe I missed it; maybe it's in the report. Where are the other four centres of excellence? That's the first part of the question. The second part is for Paul. Would you support a centre of excellence for water as well?

Mr Boileau: To be honest, I can't say where the other centres of excellence are, because I delegated that to my subcommittee chairman Claude Mindorff on that committee. I can get that answer—

Mrs Bountrogianni: But are they in Ontario?

Mr Boileau: They're in Ontario, yes.

Mrs Bountrogianni: They are in Ontario. OK.

Mr Boileau: I can get that answer for you.

Mrs Bountrogianni: That's OK. That was mostly my question: do we have any in Ontario?

What about water? There was a proposal made for a chair in water resources at one of our Ontario universities. I won't mention which one, because there was an internal difficulty. It was rejected by the actual university, which was a big disappointment to me. What do you think—

Interjection.

Mr Norris: Absolutely, and it comes out, to some extent, in the comment that I made on the committee's interim report. In my personal view, water power is the thin edge of the wedge for the way we should be approaching water management generally in the province. Traditionally, riverine science in this province, certainly in the Ministry of Natural Resources and to some degree in the other ministries with environmental responsibility, is kind of the poor cousin of lake science, which is kind of the poor cousin of aquatic science, which is definitely the poor cousin of forestry science.

We're in a co-operative relationship now with Trent University's watershed science centre. They have a very good program in place and are actually producing some hydroecologists and those types of people. I would certainly support investment in water science generally, and water centres of excellence generally. I think there are a lot of models out there now. I think there are a lot of universities that are working toward that. Guelph is another one. They have a huge investment in Guelph in

natural channel, natural flow design types of things. It seems to me, though—and it's partly because of the legislative framework that exists for water generally, the diversity of it, the disparity between water quality and water quantity—that bringing it together under one leadership would be very helpful both to the water power industry and to water managers in general.

Mrs Bountrogianni: Again from my visit to Europe, there will be for the first time in Europe—and it will be coordinated across all the countries in Europe—a master's in renewable energies, which will include, of course, water and wind.

This leads to my other question. At this conference I attended in November, there were a lot of Spanish companies there for wind power. They were also bridging into tidal power or wave power. Is there anything like that done in Canada, to your knowledge, in a significant way?

Mr Boileau: I think the technologies that were developed for tidal power—I believe there was some work done on the east coast a number of years ago. There are some difficulties, going back to Jerry's comment about low head, low flow. In this case, there's lots of flow but low head. There are some environmental issues, there are sedimentation issues, and they've never been able to build a business case for investment in that.

But some of the wave technologies that are coming out are quite interesting, with bottom-anchored systems that are environmentally sustainable. They are becoming more cost-competitive. I don't see that as an opportunity in Ontario, clearly, because we don't have the big ocean waves, but the world's opening up as far as renewables is concerned. I agree that there's a real need for Ontario and Canada to get engaged in education programs, and chairs in universities, and leads on renewable energy.

Mr Norris: I believe BC Hydro has invested in it recently as well.

Mrs Bountrogianni: You answered my other question, which was, of the 10,000 megawatts of wind that's a Canadian target, how much would be for Ontario? I think you said 2,000?

Mr Boileau: In our RPS proposal we were very conservative. You'll see that on the table. I think we were suggesting 1,500 to 2,000 megawatts. I think there's more commercial potential, particularly offshore on Lake Erie. There's an estimate on the US side of Lake Erie that there's 144 terawatt hours of developable wind power on Lake Erie. Clearly that wouldn't be acceptable from the standpoint of putting thousands of towers out, but that's the same amount of electricity that's consumed in Ontario in one year.

It would be reasonable to assume that the combination of wind power development and water power development could easily deliver 3,000 megawatts of competitively priced renewable energy into Ontario. We need some bridge in order to cover the gap between our costs in the current market, but we won't need that after 2010. Three thousand megawatts is a lot of power and would

account for a good chunk of the load growth that's going to come in this province.

1250

We also have to consider that in coming years we're going to see some retirements of facilities. At the end of their useful life, rather than reinvesting money in some fossil plants, they may be shut down. We have to have some capacity for dealing with that and some energy storage systems. That leads into one of our next presentations: the need to marry the strategy behind wind with water power storage and reservoirs so we can deal with a changing market mix.

Mrs Bountrogianni: Thank you. If there's any time left over, Lyn wants to—

Mrs McLeod: I have just one quick question to Paul, actually. I have frequent briefings with David on the wind power situation. I apologize, Paul, for not having been here when you made the presentation on water power. I understand you did deal with environmental assessment issues. Could you just tell me whether in your presentation you dealt with the basic question of your sense that realistically there is a fair bit of water power development, which I know is primarily left in north-western Ontario in terms of potential, without significantly changing the environmental standard we have for assessment now?

Mr Norris: Without significantly changing the standard. What we as an association are doing is trying to go beyond the existing regulation for environmental assessment to develop a class for the entire sector.

Mrs McLeod: A class environmental assessment. We talked about that about 12 years ago, as you remember well.

Mr Norris: Yes, I know. I was there. But this time, I think we have a hope, because I think that the framework that has been put in place under regulation 116—contextually, it's a class EA for the sector. Our aspiration is to engage the Department of Fisheries and Oceans, which has a key role, the Canadian Environmental Assessment Agency, the Ministry of Natural Resources for their mandate and the other stakeholders—First Nations, the environmental community—to talk about that precise question. How do we propose to have a process in place, from an environmental assessment perspective, that meets the needs and expectations of the industry developing the proposal and the other stakeholders in the development process? I hope to know a year from now, after we go through the development of a class process, whether or not that is realistic. That's a very real question. We're confident that we can put in place the right measures in order to achieve the goals of environmentally sustainable economic development. But it's something we'll have to prove, as an industry.

Mrs McLeod: I'll be interested. As you know, I have long been a proponent of some form of class EA for water power development. Then you get some, shall I say, renegade proposals that come to the fore every now and again that give you cause to think, "No, you've got to assess every project individually," because some of them

are renegade proposals and they need to meet a standard and I would not want to see them slip through.

Mr Norris: Absolutely. One of the key differences I think you'll see if the Ministry of Natural Resources adopts our recommendation is that, rather than an allocation policy that is analogous to the mining industry staking a claim, which is what we had in the late 1980s and early 1990s, we are suggesting that, with better investment and the ministry understanding where the resources are, doing a GIS overlay of what the significant known considerations are, from an RFP perspective, we'd be in a better position to have up-front identification of issues. A lot of the reasons those 300 development proposals of those renegades didn't go through in the early 1990s is because it was a gold rush mentality, with some people who were competent and could take a development through and others who, quite frankly, were not. We as an industry have a responsibility to make sure that we continue to be viewed as a preferable energy source, and that's one of the ways to do it.

Mrs McLeod: Thanks.

The Chair: Thank you very much. We'll move on to the next presentation on RPSs.

Mr Boileau: This slide presentation goes into some detail on RPS, but I think there's a fair degree of familiarity with the RPS structure, what it does and how it operates, so I may skip over that fairly quickly if the committee agrees that that's worth doing.

A renewables portfolio standard: a made-in-Ontario solution. Clean air, a secure energy supply and jobs and investment are the targets, the objectives, in a renewable portfolio standard.

I said at the beginning of my presentation, when I started to speak about the recommendations, that PTC, or production-centred renewable portfolio standards, are crucial parts of our recommendations. Without them, all of the other recommendations mean nothing, because you won't get investment. We could have great tax exemptions and no capital taxes and holidays on royalties; but no RPS, no investment—it's as simple as that.

Right now investment is flowing away from Ontario into jurisdictions that have RPS and other incentives. We need a bridge incentive for the period from now until 2010, and we suggest that there is no requirement for incentives beyond 2010 or 2011, because we should be competitive.

The RPS recommendation, I should tell you, isn't a unanimous type of recommendation, but we were very careful to try to include consultation with a variety of stakeholders. Clearly, the Wind Power Task Force and the Ontario Waterpower Association corroborated very closely because the bulk of the RPS capacity additions are going to come from those two sources—we think. And since we're here, that's what we're telling you. But we worked closely with IPPSO and CanWEA and other stakeholders in the development of the recommendations. We also know there's a strong indication from reading the committee reports that RPS has broad support in other jurisdictions and from environmental groups everywhere, including here in Ontario.

I won't go into the details on RPS and what it does, but it's important to remember that RPS has associated with it renewable energy credits that have a value. So if you produce electricity from a new water power station or a wind park, every unit of energy, every kilowatt hour, would have an associated renewable energy credit. So when I refer to renewable energy credits, I'm talking about that other product. There's the energy product and there's the green attributes, and that's what I'm talking about.

When we looked at it, we had a number of objectives: we wanted to encourage investment; we wanted to propose something that would help the Ontario government meet its emission reduction targets; we wanted to commit Ontario to sourcing 8% of its 2010 electricity consumption from qualifying renewable energy. We felt that whatever we proposed in terms of additions, percentages, increments and graduations must be realistic. In other words, it would be stupid to recommend 20% if it was going to cause a rush to buy RECs and push up the value of those RECs.

So we had to look at what was available in the market in terms of resources, what the capacity of the industry and the financial community was to bring these projects on, and at what price. I'll come back to price later on.

We also wanted to propose something that was inclusive of all renewables. This is a subject: is water power renewable? Well, of course it's renewable. It's the ultimate renewable. In Ontario, we've got 25% or 26% of our energy coming from water power. There is no good water power and bad water power. There are some good water power projects and there are some bad water power projects, but they have to be looked at from an objective standpoint. So we wanted to be inclusive of all renewables, including solar, including other technologies—geothermal, wave or whatever happens to come up. The world is changing very quickly. So we looked at that and said, "Let's be inclusive."

We wanted to make sure that the recommendations didn't strand existing assets. We're all taxpayers and ratepayers. We paid to build the nuclear plants, we paid to build the coal-fired plants, we paid for this huge system we have here today and we're going to continue paying for it for a little while, for the next number of years. It doesn't make a lot of sense to me, unless there are some compelling reasons why. We should not be stranding assets. There are other ways of dealing with their emissions: cap credit in trade, reduce capacity factors because it's not competitive. If Nanticoke is operating at 50% today and 30% tomorrow in terms of capacity factors, there is a corresponding reduction in emissions. So there are ways of still maintaining the values to the ratepayer, to the shareholder—and citizens of Ontario are shareholders in the generation system right now. So we don't want to strand assets in the recommendations. The targets and schedules must be firm to provide a solid base for investor confidence.

I already told you what our recommendation was. These are the numbers. We went back to 1991 because

the federal government is encouraging everyone to look at the Kyoto Protocol year 1991 as the start date for counting renewables and offsets. So we went back to that. There is about half a per cent in there. So in reality, this recommendation is probably closer to 7% to 7.5% RPS.

We incremented it according to the way we thought industry could bring on projects. For example, if you're going to build the Beck tunnel, it's not going to happen in one year. It takes a long time to do the contracts, drill the holes and commission it. Water power projects tend to take a little bit longer. If you're going to do a wind power project, how fast could you bring on 100 megawatts, 500 megawatts or 300 megawatts? If you're doing an anaerobic digestion project, how fast can you do that? So those are the numbers—you can look at them in your report—and those are the increments.

1300

This is the breakdown. Water power, we had a capacity of 1,000 megawatts to 2,000 megawatts; municipal waste, anaerobic digestion, landfill and biomass, 200 to 500; wind power, 2,000 to 6,000. These are ranges. So we said, "OK, this industry can deliver between 3,200 megawatts and 8,500 megawatts." We also analyzed the energy component of that, because for water power a large chunk of the capacity is associated with an equivalent energy component, with the Niagara redevelopments.

The percentage of Ontario demand is there. We think there is a possibility of bringing on 7.6% to 18%. We picked the number 8%. Those are the market prices that are going to be required in order to attract that kind of investment and deliver that kind of capacity and energy by 2010.

What does it do for air quality objectives? Well, we asked OPG to analyze it. We said, "Here are the RPS percentages. You guys know what your emissions reduction programs are, you know what the nuclear restart or the nuclear reinvestment program is going to bring on, so give us your numbers." There they are. They are real. There it is with RPS and without RPS. We can get the numbers behind that for the committee but I think the bar graph—it's not a magic bullet, it doesn't address all our issues, and besides that, not all our pollution comes from electricity generation, but that's a pretty significant number on CO₂ emissions.

The next one is NO_x emissions, which are a big issue in Ontario in terms of air quality and public health. There you have it, with RPS and without RPS. Clearly, OPG is factoring in some of its NO_x reduction programs and I think perhaps factoring in the restart of the nuclear units and some lower-capacity factors on the coal. That's a pretty significant reduction even without RPS, but RPS makes it look all that much better.

SO₂ emissions: again, significant reductions with an RPS. We said that whatever we proposed had to be measurable; whatever we proposed had to help the Ontario government and Ontario citizens have better, cleaner air. Well, there it is. There are the results.

This is a kind of interesting one. We thought we'd throw this up just as food for thought. It says, "What is

the future role of water power and wind power in this mix?" Well, we've got nuclear. We've got non-utility generation that has fixed, must-deliver contracts. Hydro is represented by this yellow section here, coal is represented by this big blue, and oil and gas are up at the top.

Where do we want our future to be? Do we want another line in here for wind power, and what's it going to do? We talked about how it helps in the middle of the day. So wind power in here—where is it going to take its chunk out of? It's not going to take it out of nuclear. It's base-loaded. It's not going to take it out of the NUGs currently; they're base-loaded. So wind could add to that, and wind-water synergies could make that little bubble there even bigger. So I just ask the question, what is the future role of water power and wind power in this mix? Well, the committee has to answer that.

Cost of RPS: what's it going to cost? There is going to be a variety of factors. The wholesale price of power and natural gas will have an impact. So if prices are high, it's not going to cost very much to have RPS, because you won't have to stretch so far. The value of emission set-asides, renewables and carbon credits will have an impact.

I've already talked about the impact of emission caps on electricity prices from fossil fuels and the federal production incentive program.

Many factors can make the cost of an RPS low. In fact, the scenario exists where an RPS will lower the cost of electricity in the province. I'm not going to get into that right now. There are a lot of actuarial calculations in there, but clearly they're related to the price of natural gas. If we're banking on natural gas being our saviour and the price of natural gas requires 10 cents per kilowatt hour for electricity, then 8-cent wind is going to mean that the prices could be lower with wind, or with a renewable portfolio standard, or with water power development.

The summary or the conclusion to this is that the Ontario Wind Power Task Force estimates that the probable impact on blended wholesale prices is less than 1% for the first years and less than 2% by 2010. I should tell you that those numbers went up before the production incentive went in, so you can reduce those numbers by 40%. A renewable portfolio standard likely is going to cost the ratepayer in Ontario less than 1.5% and possibly less than 1%. That's not a big price to pay, I think, for the political risk of going to the public for the government and saying, "We have to accept a small 1% increase in electricity rates over eight years to reduce our emissions and help us meet our clean air objectives." That's not a big political risk. In fact, I think it's a political winner.

What does the future hold? We're already getting 26% of our electricity supply from renewable energy. Government needs to promote this a little bit. Ontario is already doing a fairly good job on renewable energy. We can build it, and we can build it up to 34% with the RPS. That's pretty significant. But what would happen if we had a conservation program and what would happen if

we extended the RPS programs beyond 2010? Could we get 35%, could we get 40% of our power coming from renewables? Could we get 50%? I don't have the answer to that, but clearly it's a question that deserves answering.

We just have two more short ones. I hope we haven't confused anybody by the association between the wind and water power side. We thought it would be useful to just try to show you why we think there's a real link here. It isn't because Paul and I have just worked very successfully, I think, with the Ontario government and a variety of ministries; it's because there are some real synergies that have been discovered in other jurisdictions. By way of illustrating that, Denmark has been able to go up to 17% of its electricity supply from wind largely because they've contracted bilateral contracts with Norwegian reservoirs to deliver power during low-wind periods. There's a synergy, I'll tell you, and it works.

Mr Norris: Very quickly, this presentation actually is an excerpt from some work that was done by the university of Quebec. Back to the earlier question about centres of excellence, I think it's a good example of what can be possible. The university of Quebec, in partnership with a number of other organizations, looked at this question with respect to what is the reality of investment in new water power, new wind power and how the two can work together. An obvious synergy for us, when you first look at this, is pump storage. There are all kinds of opportunities to look at the ability for predictable wind power to serve reservoir management in a pump storage scenario. That's an easy example. The people in Quebec have taken it a step further, and I think it's a model that, should the province of Ontario look at a renewable energy strategy, these types of synergies are well worth looking at. So this is with due respect to Mr Gaétan Lafrance. He has been kind enough to share this with us. He presented this at the CanWEA presentation. This is by no means our work, but I think it was a useful exercise.

We're going to talk about the electricity system mix, some of the wind power challenges, integration in the existing generation grid. David is going to talk a little bit about wind farm integration into the Canadian grid, the lessons from the studies they've done in the province of Quebec and in fact have extrapolated across Canada.

I go back to this 10,000 megawatts by 2010. I think what we'll find here is that if you marry water and wind, that's completely possible. They looked at hydro-wind optimization for the Quebec-Labrador case with the Ministry of Natural Resources there and they had other partners in Helimax and IREQ. They wanted to look at the relationship between load and wind power and cold regions. So it wasn't just to the province of Quebec. They looked at how they were managing their reservoirs, and the fundamental question was, "Should we build new waterpower, should we invest in gas generation or are there possibilities to use existing wind resources?" I think they came up with some pretty astounding results.

There's the existing power generation mix. We talked about 65%—this is Canadian—for hydro on an average,

and of course that's largely representative of the province of Quebec, British Columbia, Newfoundland and Labrador and Manitoba, and Ontario at 26%. This just demonstrates where hydro appears to be going in the future versus the other sources. We couldn't change the French to English, I'm sorry, but it's carbon, oil, gas, nuclear and hydro. It just gives you, if you look at the slope of these graphs, a relative understanding. It's confirmed, for example, in the province of Ontario. If you look IMO's projections for the next 10 years for load growth, they're projecting it's all service by gas.

So 10,000 megawatts by 2010; what that would represent, in context, is 7% to 8% of the Canadian power capacity, 4% to 5% of Canadians with electrical energy by 2010 and 33% to 50% of the electrical demand growth. It's completely consistent with an RPS that David just talked about at 8%. If we were talking a 2% growth over the next 10 years, as IMO is suggesting, you can get 33% to 50% of that out of an RPS at 8%.

1310

The traditional thinking in wind power was that integration of large wind farms is too risky because it's intermittent generation—I think David has dispelled that rumour, hopefully, with some discussion on his earlier presentation—and that we need a backup to ensure power supply. Typically, if you do this environmental-economic analysis associated with wind power, you have to factor in where you get your backup supply. If you get your backup supply from coal to supplement intermittent wind, your environmental implications are just as severe as if you're using coal, although on a smaller scale, depending on how much wind you've got.

The traditional thinking is that wind's too costly in the province of Quebec. The questions they asked themselves are: how true is that statement for across Canada? Are we really looking at this from the right angle? Are we really looking at synergies versus competition? Traditionally, you look at wind versus water versus this versus that. Quebec, I think, has done something quite innovative and looked at how the two can work together.

The rest of the presentation is on wind and water power.

Mr Boileau: That's exactly right, Paul. They did take an unconventional view of the synergies. So are there any advantages for the hydro-wind concept? By the way, we seldom use the word "hydro," because it's confusing in Ontario. We use the term "water power." So, are there advantages for the water power-wind concept?

The Quebec study looked at reservoir management and possible concepts. Hydro is used for base and medium load, and the conventional thinking in the future is that you're going to have to bring in gas turbines to supply the peak load. The emerging concepts are that you could purchase electricity from neighbouring networks instead of building gas turbines. The weakness with that is that there is no change in greenhouse gas issues, because they just build them over there or they burn more coal to supply your electricity, and Quebec would have no control on market price and supply.

Another emerging one is gas turbine for baseload. That's been looked at in a variety of jurisdictions, including Quebec, BC and Manitoba. The weakness with that again is that you don't get away from the greenhouse gas emissions and you don't entirely get away from the NO_x emissions that are there. There are still SO₂ emissions that are involved in the production of gas out west. Even though SO₂ is largely stripped from our gas, there's still some process SO₂ that ends up in the air.

The third emerging one is that wind power competitiveness is improving.

This is an interesting overlay. What the Quebec study did is they looked at wind speeds and they matched it to load on an annualized basis. I said before that our wind speeds and the density of our air in the wintertime are higher. We are a cold climate; so is Quebec. Look at the nice match-up between load and wind on a monthly basis from 1985 to 1995. It's very interesting.

Here's another situation that's kind of interesting. This blue represents the reservoir volumes or the inflows into reservoirs, and this red line represents the Quebec load and its export load. You can see that in the period of the year, the summertime, when its load is the highest, its reservoirs are at their lowest point.

This is a weekly load demonstration here, the load being the red line throughout the week and the blue being the wind production for that. If you normalize that graph, again there's a nice relationship.

I should explain that many of these slides jump around because we didn't do the whole presentation. It would have taken too long and many of the slides were mostly in French, so it would have been difficult to explain what it was. But this was particularly interesting. The objective of the Quebec-Labrador study was to see how wind power optimizes reservoir management, determine the maximum size of a wind farm that could be installed without any significant investment in the electric system—in other words, putting in more transmission lines, adding backup and things like that—and what is the best geological strategy to locate wind farms according to market, reservoir, management, power system constraints and wind quality.

So they looked at that for Quebec, but do we have some similarities in Ontario? Sure. We've got big reservoirs. Lake Superior is a reservoir, in case nobody knows it. There are power dams and control structures at the end of Lake Superior; effectively, a lot of the Ottawa system. The amount of storage that's available in Ontario is huge. It can make up to 30%, 40%, 50% of the peak that has to be supplied during the daytime. It's just amazing. And seasonally it's pretty significant.

The main conclusions? We'll just jump right to these. The conclusions of the study said that large wind power capacity can be integrated into the existing power system without additional transmission investment. That was interesting. "For the Quebec-Labrador power system alone, we do not notice"—that's Lafrance—"any reservoir spillage for wind power capacity that reached 8,000 megawatts." What does that mean? They put 8,000

megawatts into their model and they ran it according to their wind patterns and the reservoirs didn't overflow and spill. In other words, a lot of energy went into storage. Instead of producing power from water power, they stored water, so it was available for another time, and they didn't spill up to 8,000 megawatts. That's really significant.

What does that mean in Ontario? Are our reservoirs always full? The answer is no. Our reservoirs are mostly part full because you're exercising the reservoir. What would happen if your reservoir was more full? Two things: you would have more power stored, more energy stored for when you need it during droughts and during certain times of the day, the month and the week. More importantly, a lot of your power generation is located on the reservoir. A higher water level increases the head and increases the efficiency and the performance of the turbines.

According to the Quebec-Labrador case, a general rule can be assumed: in the water power type of system tested, at least 10% of Quebec electricity needs could be provided by wind power without capacity additions from other sources. Pretty interesting. That means without adding more gas-fired generation, without having backup. The backup is the fact that you're storing energy in the reservoirs.

Here is an example of that graph. They ran a couple of different scenarios but basically what happens is that your reservoir levels, on average, stay higher because of the presence of wind. So energy gain is a function of the reservoir level at the beginning of the period. Full reservoirs improve turbine efficiencies so that they are better able to meet daily and seasonal demand.

Load and wind correlation: I think I'll skip through this one because we're getting tight on time. Here was one of the maps they produced. They said that when they analyzed Ontario, Quebec and the eastern Canadian reservoir capacity and all of the reservoir capacities out west, they think that they could get a very good match-up with 7,000 megawatts happening in eastern Canada. They don't break it out in terms of Ontario, Quebec and the east coast, but it might be safe to assume that our number of 2,000 fits in very nicely with that; Manitoba and Saskatchewan, 900 megawatts; BC and Alberta, 2,100 megawatts. That's a possible Canadian strategy. Why is it a strategy? Because it marries wind and water power.

We're basically saying that from a technical standpoint it seems manageable to extrapolate the results of the Quebec-Labrador study to other hydro systems in Canada by distributing wind power according to the size of existing hydro capacity by region. Do we need to study this in Ontario? You bet we do. We need to understand that synergy. That's it for that one.

I think Paul is going to close with just a few comments on the interim report.

Mr Norris: Do we still have time?

The Chair: We're down to somewhere around seven or eight minutes.

Mr Norris: All right. I'll do it in four.

We've provided—and hopefully everybody's had an opportunity to have a look. Both the Wind Power Task Force and the Ontario Waterpower Association provided direct written comment on the interim report, on the specific recommendations of the report. I'd just like to open by congratulating the people who put together the report. I thought it was very well done and that it flowed logically. Instead of going through those specific recommendations, you can read them yourselves. What I'd like to try to do is tie together what we've said already specifically related to what you've suggested in the interim report from policy questions.

To me, there are basically five themes that come out of the interim report: Do we need direction on renewable energy? What are reasonable and relevant targets to achieve that direction, if we do? What are the economic instruments that best serve that purpose? How do we achieve this in the context of resource management? How do we coordinate objectives? To me, those are the themes that have come out from the interim report.

Clearly we need direction on renewable energy in this province. The last time we had any kind of renewable energy development in this province, the direction came from Ontario Hydro's demand-supply projection. We need clear, measurable direction. The reason we need that is because the people who have to make this happen within government are not the Ministries of Energy. It's the Ministry of Natural Resources that manages the 87% of the province that we have. It's ministries like the Ministry of Northern Development and Mines which has the northern development mandate. Until renewable energy becomes part of their core business, it won't happen. It just won't.

We have to have clear targets that say—MNR's job is ecological sustainability, to balance the resource use. If there's no clear direction that this is a policy focus, it won't happen. You won't see new wind development and you won't see new water power development.

1320

We need reasonable, relevant targets. In our recommendations, we've tried to come up with numbers instead of ideologies. We need specific targets, and we think that we should bring together the water power, the wind power, the biomass people, the Pollution Probes of the world and come up with some reasonable targets. What I would hate to see is somebody shoot down an RPS or some other mechanism because they couldn't agree on what the targets should be. We think there needs to be additional dialogue in that regard. We think you should position those targets in the context of environmental objectives, most notably related to Kyoto and MOE's air quality initiatives. A renewable energy strategy has to be part of something, and we think all the planks are there.

We need provincial policies designed to enhance renewable generation and we need them to be inclusive of water power, particularly in view of our significant role in enhancing the value of wind generation energy.

I've seen a lot of public debates on green, on big water power versus small water power. We've advocated that

there be no minimum threshold for EA and that you judge a development on its merit. We think that's environmentally responsible as opposed to some artificial definition for storage or size or whatever.

The economic instruments: clearly, what we've proposed is the RPS. We think that's the most effective, inclusive mechanism for all renewables. We think Bill 140's provision needs to be clear that what that did was to deal with the inequity. New gas-fired generation facilities were taxed at about one thirtieth of the taxation for water power facilities. It hasn't spurred this new investment, it isn't the magic bullet, but it's an important plank in a renewable energy strategy and one that we should extend to the wind power energy industry.

Voluntary green marketing, from all I've read, will not convert public opinion and willingness to pay very much. You'll have 2%, maybe 5% take-up. But simply allowing people to market green energy doesn't very often result in a huge uptake when it comes to time to pay. Therefore we believe there need to be additional incentives to trigger the required investment to meet RPS objectives.

David talked about the production incentive. That's a great step forward. It doesn't do anything for water power. I just want to make that point. It's specific to wind; it doesn't apply to water power at all.

I think we need to build and improve on the federal challenge, and I think we have to have a comprehensive renewable strategy as opposed to one for specific sectors. We don't recommend direct government subsidy. We would like to see market-designed incentives, consumer-based choice incentives and tax regimes that address policy priorities.

Resource management: as I said, water and wind power development and any other large-scale development are really related to who owns the land, and the people of the province own the land where new development is going to happen for them predominantly. So you have to have a method that deals with integrated resource management, that deals with balancing competing uses. In my view, MNR is in the best position to do that. MNR does not have a renewable energy mandate, as I suggested, but if you're looking to an organization that has to balance competing issues now, that's probably the one you would start with, in my view.

You've already invested in an NBR, committed short-term resources to the ministry to deal with water power, and David has made some suggestions with respect to wind power. This isn't a short-term commitment. We saw what happened in 1989 to 1993, when it was a short-term commitment. We created a huge bureaucracy around water and wind power and peat and everything else and then it collapsed upon itself in about three years. If you're going to have a strategy to get to 2010 and beyond, this is going to have to become a core business of the relevant ministries.

In the coordination of objectives, it's definitely important to coordinate provincial and federal programs, but I think it's equally important to coordinate access to information and knowledge. The federal government, through Natural Resources Canada and other organiza-

tions, has a base of knowledge and information and regulatory responsibilities that in the absence of coordinating can stymie any new investment.

The Chair: We have less than one minute.

Mr Norris: OK. I've already dealt with educational institutions and partnerships. Can you skip to the second one?

Here's our view on this. I'll close on this. What does a sustainable energy future look like? Number one, conservation. We're here to talk about renewable energy, but any kind of sustainable energy future has to have conservation as a primary priority.

Renewable energy? Absolutely. Fuel switching, cap credit in trade, education. Those are the five planks that we would see of your strategy.

Thanks for your time. Sorry for the delay.

The Chair: Thank you very much for your presentation. The full half-hour is up.

Unless there is further direction from the committee, the committee will now adjourn. We'll be meeting at the Kakabeka Falls.

Mr Boileau: We have a bus waiting outside.

Mr Gilchrist: We have one question that Mr Ouellette has that will only take a minute.

The Chair: OK. I see unanimous consent. Please go ahead, Mr Ouellette.

Mr Ouellette: Essentially, the question deals with the presentation on wind power and the retention of water for future storage. If I were in the business and it were privatized, the first thing I would do is deplete those and sell them to the States.

How can we ensure that we're going to maintain Ontario's stable prices when opportunities are there to export the product to the States? If we're going to supplement with wind power in order to retain and use hydro for peak loads, how can we ensure that it stays in Ontario? Possibly something like a rebatable domestic users tax, so that, in compliance with free trade, you make sure that any electricity leaving Ontario is heavily taxed so it can subsidize domestic use, or minimize the use of an expanded tower transmission capacity to ensure it's retained in Ontario?

Mr Boileau: I'm not sure philosophically what the long-term objectives of an open market are. I think an open market implies that we're going to have an open market with other jurisdictions. If we have an open market with other jurisdictions, clearly part of that will be bilateral contracts between loads and generators, so generators who are smart will want to package together various sources of supply from wind, water power storage and fossil.

With regard to selling product outside of the province, personally I don't have a problem with that. If we are selling renewable energy outside the province, we are presumably going to be selling it into the jurisdiction on that map up there that has a whole bunch of fossil generation that has flown across the border. We don't have any barriers on their pollution coming into our province, flowing across the border and making the people of Ontario not well.

My response to that is that I would hope Ontario not only builds a good renewable industry and has competitive rates, but that in addition we build a large renewable industry, a good wind power industry, and we export renewable energy to the United States as well to reduce the emissions from that source, which are the major causes of pollution in Ontario.

Mr Ouellette: The other side of that coin is, though, that as long as we export it, there is little incentive for companies to locate in Ontario. If we have incentives or reasons for people to come to Ontario to produce those jobs, we can retain them here. I think it's part of government's mandate to ensure the best interests of the public at large.

The Chair: With those comments, the committee now stands adjourned. We will be visiting Kakabeka Falls prior to returning to Toronto. The bus is waiting outside. I understand you had invited them to bring their luggage with them and be dropped off at the airport on return.

Mr Boileau: Mr Chair, Marie has a flight at 4:35, so we have arranged for other transportation back for her in case we're running a little bit late. Anybody else who has to be back, it's the same story. So if everybody can try to be on the bus in 10 minutes.

The Chair: Thank you very much. The committee is adjourned.

The committee adjourned at 1328.

CONTENTS

Monday 18 February 2002

Wind Power Task Force; Ontario Waterpower Association.....	S-473
Mr David Boileau	
Mr Paul Norris	
Mrs Lois Chevrier	

SELECT COMMITTEE ON ALTERNATIVE FUEL SOURCES

Chair / Président

Mr Doug Galt (Northumberland PC)

Vice-Chair / Vice-Présidente

Mrs Marie Bountrogianni (Hamilton Mountain L)

Mrs Marie Bountrogianni (Hamilton Mountain L)

Mr James J. Bradley (St Catharines L)

Ms Marilyn Churley (Toronto-Danforth ND)

Mr Doug Galt (Northumberland PC)

Mr Steve Gilchrist (Scarborough East / -Est PC)

Mr John Hastings (Etobicoke North / -Nord PC)

Mr John O'Toole (Durham PC)

Mr Jerry J. Ouellette (Oshawa PC)

Mr Ernie Parsons (Prince Edward-Hastings L)

Also taking part / Autres participants et participantes

Mrs Lyn McLeod (Thunder Bay-Atikokan L)

Clerk / Greffière

Ms Tonia Grannum

Staff / Personnel

Mr Jerry Richmond, research officer,
Research and Information Services