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Mardi 28 août 2001

Select committee on alternative fuel sources

Comité spécial des sources de carburants de remplacement

Chair: Doug Galt
Clerk: Tonia Grannum

Président : Doug Galt
Greffière : Tonia Grannum

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LEGISLATIVE ASSEMBLY OF ONTARIO

ASSEMBLÉE LÉGISLATIVE DE L'ONTARIO

SELECT COMMITTEE ON ALTERNATIVE FUEL SOURCES

COMITÉ SPÉCIAL DES SOURCES DE CARBURANTS DE REMPLACEMENT

Tuesday 28 August 2001

Mardi 28 août 2001

The committee met at 0835 in the Marriott Hotel, Ottawa.

ENVIRONMENT CANADA
NATURAL RESOURCES CANADA

The Chair (Mr Doug Galt): I will call the select committee on alternative fuel sources to order here in Ottawa. I think we have most of our committee here; there are a few yet to come.

The first delegation to present is Environment Canada and Natural Resources Canada, a joint presentation. I believe there was some discussion about timing. Possibly we could look at a half-hour for that combined presentation.

Mr Richard Godin: My name is Richard Godin. I'm with Natural Resources Canada. I act as senior adviser for renewable energy policy. I'd like to introduce my colleague, Mr Leslie Welsh, who is head of sustainable energy at Environment Canada.

Our topic is emerging renewable energy sources, and there will be a separate presentation on the topic of alternative transportation fuel from a colleague of mine at Natural Resources Canada.

Our presentation will cover four points. First we'll touch briefly on the definition of what is renewable energy, what is alternative energy; second, a bit of policy consideration on why the federal government cares about renewable energy; third, we'll go through our list of actual programs and initiatives; and we'll conclude by outlining areas of co-operation.

With respect to definition, renewable energy can be defined as several energy sources that can all produce usable energy without necessarily depleting resources. So we're talking about energy sources such as moving water, biomass—living matter like wood, corn—the wind, the sun and even the earth itself as an energy source. These sources, using a wide range of technology, can produce energy that can compete in different markets, such as the electricity generation market, the space and water heating and cooling market, the transportation market and even mechanical power.

When discussing energy policy matters, the expressions "renewable energy" and "alternative energy" are often used together. In slide 4 on page 2—you have copies of the presentation in front of you—we've tried to express the difference between the two, between renewable energy and alternative energy.

The circle on the left is renewable energy, and essentially, from a policy perspective, we differentiate renewable energy into two; that is, conventional renewable energy and emerging renewable energy, which is the topic of our presentation this morning.

In Canada, conventional renewable energy sources include hydroelectricity, which is well established and the leading form of electricity generation in Canada, and, as well, the combustion of round wood or wood waste using conventional combustion technologies.

The second type of renewable energy, the one in the middle of the two circles, is emerging renewable energy. It could be roughly defined as sources that are present in the marketplace, have a promising future but still face significant barriers to widespread use. In Canada, these emerging sources include wind power, solar power—either to produce electricity or heat—geothermal energy and various forms of bioenergy. By "bioenergy" we mean energy from biomass such as the combustion of wood, but it also includes the production of ethanol from corn or other biomass sources, as well as the use of urban waste and methane from landfill sites.

0840

These emerging renewable sources are considered, from a policy perspective, to be alternative energy. That's why in the diagram they are at the intersection of the two circles, because they can compete in the marketplace against conventional, well-established sources.

Also included as alternative energies are some non-renewable energy sources. From a policy perspective, these are mostly on the transportation side, so ATFs or alternative transportation fuels. We're talking about natural gas for vehicles, propane for vehicles, ethanol, which in the diagram is in the middle and as a transportation fuel, and hydrogen fuel cell technology. Again, this is the topic of the next presentation.

With respect to policy consideration, why is the federal government interested in emerging renewable energy sources? There are several policy drivers.

First is climate change. You are probably all aware of the 1992 Framework Convention on Climate Change from Rio and then the 1997 Kyoto Protocol. This is a significant policy file in Ottawa.

Second is clean air, which deals with the interaction between the various air emissions and their impact on

human health. There are two benchmark agreements in the clean air file: the Canada-wide standards and the Canada-US clean air agreement.

Finally, another policy driver is the health of the economy. Canadian manufacturers already manufacture quality energy-producing equipment, and their project development know-how is well known in the export market. We feel that emerging renewable energy sources present further employment and export opportunities to Canadians.

I should mention as well that access to abundant, competitively priced energy sources is a long-term objective of Canadian energy policy as a whole. In that context, the deployment of emerging sources of energy will help Canada to meet that objective in the future.

Over the past few years, the government of Canada has made several key statements on emerging renewable energy sources. I have four listed on slide 6 on page 3.

First, in 1996, we released our natural resources renewable energy policy, which presents a framework for intervention to support the development of the renewable energy industry in Canada.

Second, there have been several announcements that have been made through federal budgets in 1996, 1997, 1998 and 2000. Sometimes these statements are to announce measures to help level the tax playing field, which has been an objective of the finance minister over the last few years. At other times, it's to announce discrete climate change initiatives.

Third, last year ministers Goodale and Anderson released the government of Canada Action Plan 2000 on Climate Change, which is the first federal response to the national consultations on the strategy to meet the Kyoto objective. Action Plan 2000 contains several initiatives aimed at emerging renewable energy sources.

Finally, earlier this year the Interim Plan 2001 on Particulate Matter and Ozone was the first federal response to the Canada-wide standards.

Of interest to policy-making is the current momentum that exists in Canada toward the deployment of emerging renewable energy sources. This momentum is driven by several stakeholders.

First, several provincial governments are now expressing a keen interest in renewable energy and emerging renewable energy. In slide 7, I've listed three or four examples: the BC Hydro 10% commitment; the Quebec government looking at a legislated wind set-aside for Hydro Quebec and, finally, the PEI and Saskatchewan governments purchasing wind power for their facilities.

The second group of stakeholders showing interest is the business sector, leading energy companies. Several of these companies joined environmental groups in the Clean Air Renewable Energy Coalition last year. This coalition advocates government incentives toward green power. Also, several of these companies, including Ontario Power Generation, Suncor, Enbridge, TransAlta, to name a few, are making or have announced their intent to make investment, either equity investment or investing in actual projects; for example, the wind farm being built in Saskatchewan right now is owned jointly by Suncor and Enbridge, and it's the first wind farm, to my knowledge, in Canada owned by a conventional energy company.

The third group that contributes to that momentum are consumers. Consumers are starting to get a chance to express their interest in renewable energy with green power programs being offered or, in some cases, being developed by electric utilities or others in the context of open markets. We list several in there, including OPG, which made an announcement to increase their purchases of green power.

I'll now move to a section of the presentation that lists federal programs and initiatives. On slide 8 we deal with business tax incentives. There are essentially two incentives to encourage business investment in electricity generation from projects such as wind farms, small hydro and biomass combustions. These two incentives actually help level the tax playing field, as other competing energy forms also benefit from other types of tax incentives.

First there's the Canadian renewable and conservation expense—or we call it CRCE. If you hear about CRCE, that's what it is. It's a list of early and tangible project expenses which can be financed through flow-through-share financing. Flow-through-share financing is a measure that existed; before it was available for oil and gas exploration and mining exploration. In 1996 it was extended to emerging renewable energy sources. The second measure is the capital cost allowance class 43.1. The tax system allows for an accelerated write-off of certain generation equipment.

The next slide, on page 9, from the tax system, we're moving to energy, NRCan programs. First, R&D; Natural Resources Canada is first and foremost a science-based department and through our R&D programs we co-fund industry activities to lower the cost and improve performance of technologies.

The second one on the slide here is the renewable energy deployment initiative. Under that initiative, which was introduced in 1998, NRCan implements a host of market development activities. These include market assessment studies, information dissemination, buyer guides on renewable energy systems, an outright marketing campaign to support industry. To help make appropriate decisions, the RETScreen pre-feasibility software was developed by the department and made available widely.

0850

Finally, what the renewable energy deployment initiative is most known for is the REDI incentive, which is a 25% financial rebate for businesses and institutions installing qualifying solar, thermal or biomass heating systems in their facilities. The program has been in existence now for just over three years. With respect to Ontario, we've received 44 applications for the REDI incentive from various businesses and institutions. We've also within the program launched some pilot projects with respect to residential solar hot water systems and we

have two such projects in Ontario, one in Toronto and one with the city of Peterborough.

The next slide, on page 10, is about energy and environmental programs. Essentially these are programs that came from Action Plan 2000. Through government procurement, the federal government will displace its purchases of low-efficiency fossil-fuel-based electricity with purchases of green electricity sources. We had already done three pilots for green power purchases, one in Alberta in 1997-98 and two last year in Saskatchewan and Prince Edward Island. With Action Plan 2000 the federal government now has a commitment to purchase 20% of its power from emerging renewable sources; 20% is more or less our purchases of coal or high-carbon electricity.

Secondly, under Action Plan 2000, the federal government will introduce a market incentive that will be implemented in coordination with those government purchases. It will be a limited financial incentive, and further details are to be announced in the near future.

Finally, we also have an initiative to encourage on-site electricity generation using technology such as solar, photovoltaic, in government buildings. We plan to install a certain number of these systems over the next three years.

The next slide deals with environmental initiatives, and I'll let my colleague from Environment Canada talk to you about that.

Mr Leslie Welsh: Good morning. I'm the other half of the environmental/energy dichotomy. So we're showing good co-operation between the two sides of these issues.

One of the initiatives that has taken hold in Canada in the past few years is associated with the environmental choice program, which is the program that Environment Canada started in 1986, intended to provide a market advantage to environmentally beneficial or superior products and services. Since 1996 the environmental choice program has certified and labelled renewable low-impact electricity, sometimes called green power, in support of this developing green power market. This is intended to help assure customers that they are getting what they're paying for and it provides a measure of consumer protection because there's an auditing approach with respect to making sure there's no double counting of supplies against sales of green power.

The Canada-wide standards process, which you may be familiar with, has developed some standards that are intended to be met over time. It has included standards on particulate matter in ozone, that is, smog, and along with the ambient standard is a commitment by federal, provincial and territorial jurisdictions to actions to achieve those standards, and there will be an accountability framework to help do that.

Part of that Canada-wide standards process has also involved what are called joint initial actions, which are intended to kick-start the process a bit. Two of those have themselves involved alternative energy aspects. One of them is the formulation of an electric power generation multi-pollutant emission reduction strategy and part of that will include consideration of the role that alternative energy sources can play in helping reduce multi-pollution. That strategy will be for the consideration of jurisdictions in adopting their jurisdictional action plans to effect the Canada-wide standard on smog.

Another joint initial action which was committed to by ministers was to look at alternative energy in a broader context and how it can contribute to emission reductions, and to produce a model that could be considered by jurisdictions to advancing alternative energy.

There are some broader programs that the federal government has which impinge upon alternative energy as well as other technologies. The technology early action measures program is intended to help bring climate change technologies to the market. These are technologies that do not require a lot of research but are ready for market deployment and just need a little bit of assistance to be demonstrated. The sustainable development technology fund is a fund that's just getting spun-up this year. Legislation was passed in June. It's a $100-million fund that's at arm's length from the federal government and is intended to support technologies that will reduce emissions that cause climate change and reduce emissions that affect clean air. Of course, some of those technologies will include alternative energies.

The technology partnerships Canada program of Industry Canada is another program that has been around for a few years. It is intended to help get several different kinds of technologies employed, including environmental technologies, which in turn include some alternative energy technologies. In Budget 2000, two municipal green funds were announced, one of them to support feasibility studies and another to support projects that the municipalities would have an interest in. These funds, amounting to $125 million, are managed by the Federation of Canadian Municipalities.

We're certainly looking forward to further co-operation between levels of government and we hope that our presentation will help you understand the government of Canada's existing initiatives. We would like to co-operate with the provinces, and with Ontario in particular, with respect to broad policies dealing with climate change and clean air. Such co-operation can occur in specific programs, but we are also interested in just sharing policy and program experiences with our colleagues in the provinces.

This summer we sent a letter to the Ontario Ministry of Energy, Science and Technology to explore the possibility of co-operative approaches with respect to Action Plan 2000, particularly the measures concerning emerging renewables and the electricity procurement and the limited market incentive that is planned. We've had a response from Ontario officials and we anticipate that in the coming months we'll be further exploring possible areas of co-operation.

There are also other opportunities that can be taken to help coordinate such things as electricity labelling. Ontario is very active in moving forward on improved

electricity labelling, the so-called nutritional labelling. As you heard previously, federally we have the environmental trace program which deals with labelling of the green power type of market choices. These programs could benefit by the sharing of information and perhaps coordination.

Thank you very much for the opportunity to present to the committee today. Richard and I would be pleased to answer questions if there's any time and if there are questions you want to pursue.

0900

The Chair: There is a third presenter as well?

Mr Peter Reilly-Roe: That's correct.

The Chair: OK. We have about another 12 minutes or so. Sorry about the misunderstanding about time, but anyway, we're stretching it a fair amount. Go ahead.

Mr Reilly-Roe: Thank you, Mr Chairman. My name is Peter Reilly-Roe and I'm from Natural Resources Canada. I'm going to talk about alternative transportation fuels. I actually had a letter addressed to Agriculture Canada and I was responding to that. I didn't get my invitation until yesterday. However, you have a slide deck in front of you that looks something like that, and I'm going to try and cover those topics quickly. I'll go on to the second slide.

We've been involved in supporting alternative transportation fuels since 1981, since the first response to the Arab oil embargo, when we started research and then we started programs as part of the national energy program, the program everyone loves to hate. But we did a lot of good work under that program as well on alternative fuels. In fact, we did a lot of it with Ontario. Ontario has been a major participant with us in promoting alternative fuels over the years. The first objective was to get off oil and diversify energy sources away from petroleum. Alternative fuels have certainly done that.

Federal policy has been fuel-neutral. We haven't picked a winner. We've helped each fuel according to its stage of development, so if it's a fuel cell technology in very early development with no products, we've helped on the research side. If it's something which is nearly economic, there's commercial technology around, we've helped with market incentives and information programs.

The main policy lever the federal government has used over the years has been waiving the excise tax on gasoline, which is now 10 cents per litre. So if you have a propane fuel or a natural gas fuel or ethanol and gasoline, it doesn't pay that 10 cents per litre equivalent. That's a very powerful, strong incentive. The way we've worked with provinces, and particularly Ontario, is that provinces who want to participate in this initiative as well have added their own motor fuel tax waivers to our excise tax waivers. Together that's given a very strong incentive for the alternative fuels. Ontario, for instance, has waived its 14.7 cents per litre tax on natural gas, so it's a very strong lever.

Just quickly going over the programs we have run, we started off in 1981 with a propane program which just offered a fairly small grant of $400 for conversions, and it had quite a strong response because energy prices were very high at that time. That helped a lot. We had 70,000 vehicles funded under the program. The total number of vehicles in Canada was about 150,000. A lot of people converted by themselves.

The natural gas vehicle program started in 1983. That program continues today; it is still funded from a special source of funds, and you're going to hear a lot more about that this morning from the Natural Gas Vehicle Alliance.

We also did some work on methanol in large engines and transit buses and trucks, which turned out not to be an economical technology at the time. It had some hardware problems which were eventually solved but made the fuel a difficult one. Methanol also has toxic properties which are problematic in maintaining and servicing vehicles.

We've done a lot of work on hydrogen since the 1980s, and you'll hear a bit more about that later on.

Ethanol is also something we've supported for many years, and particularly since 1993, when ethanol was granted the waiver of the gasoline excise tax. That really helped it a lot. We had a five-year initiative to support fuel ethanol in a number of ways. Agriculture Canada coordinated information and research on agricultural feed stocks and there has been a lot of work on cellulosic ethanol research in our department. In 1996, the national biomass ethanol program was implemented by Agriculture Canada to help new plants secure financing for their investment. The Chatham plant of commercial alcohols was the first major plant to be assisted under that program. R&D on cellulosic ethanol continues, and Iogen is the major recipient of that work.

Just last year, Action Plan 2000, our response to climate change to meet the Kyoto goal, had five transportation initiatives, of which two are fuel-related. One is a fuel cell alliance, and the other one is a future fuels program for ethanol. The ethanol program has not yet been announced in detail, but I can tell you broadly that it reproduces the national biomass ethanol program that was successful in the mid-1990s, and it does it on quite a bit larger scale. We hope to be able to increase production capacity of ethanol about four times from its current level, so the total production in Canada should be around one billion litres by the late part of this decade. That will assist about 27% of all gasoline to contain ethanol blends.

On the fuel cells, that program has been announced, a $23-million program over five years. We hope to lever twice that much from participants. Its intention is to take fuel cell vehicles and put them out into commercial service with a variety of refueling station technologies so we can learn what works and what doesn't work and we can put standards in place and training for people to operate them and help that market along.

Because of the lack of time, I'll leave you with the deck. It just goes through parts of the program there, but it has demonstrations and technical facets. The participants are listed there. There are four provincial govern-

ments, Ontario being one because there's a lot of activity in fuel cells in Ontario, and companies like Stuart Energy, for instance.

Flipping now to slide 10, there's a list there of alternative fuel projects we have had or that are current with companies in Ontario. You will see a list of them there.

The last thing I should probably point to is why we are interested in this at all now. The reason is that greenhouse gas emission possibilities of alternative fuels are varied but quite significant. If you look at this chart here, it shows the different greenhouse gas emission indications of fuels, starting off on the left with conventional gasoline, which is approaching 500 grams per mile. You see that natural gas has about 25% less, propane about 20% less, and various other ones. The interesting one there is ethanol from corn and ethanol from cellulose. Some of them have a bar below the line. That means you sequester CO_2 when you grow corn or you grow biomass. So you take that dark part off of the upper bar and you get much less. It results in about a 40% reduction in greenhouse gas emissions for ethanol from corn and 60% to 70% for ethanol from cellulose. That's very signifycant. Then for fuel cells, you see the smallest bar there is a fuel cell vehicle working on hydrogen made from electrolysis using Ontario's power generation mix. So you see the possibility there is quite a lot for reducing greenhouse gas emissions, and that's why we're interested in it.

The chart on the next page just gives more detail on greenhouse gas emissions from fuel cell vehicles from a variety of fuel sources. I won't go into that because of the lack of time. Then on the last slide there is a diagram showing the different routes from feedstocks on the right-hand side through to vehicle technology on the left-hand side. The interesting thing there is that fuel cell vehicles can use a variety of feedstocks including biomass. We're doing work on most of those options right now. Thank you very much, Mr Chairman.

The Chair: Thank you for the presentation, obviously very exciting information that you're bringing forward. I hope you will stay on recall. We may be back either by video conferencing or back in Ottawa to chat with you in the future. We have eight or nine months to work on this. I'm going to give two minutes to each caucus to ask some questions. Our flight is a bit flexible, so unless there are any objections, a couple of minutes to each caucus and then we'll move on to the other delegations.

Ms Marilyn Churley (Toronto-Danforth): Thank you very much for your presentation. There isn't a lot of time, so all the questions I have to ask will probably wait until later. I guess for now I'd just like to ask you what you meant by the long-term objectives to proceed with these renewable energy strategies and what can the federal government do to speed that up so it's a shorter term.

0910

Mr Welsh: I guess "long term" refers to the fact that we have some longer-term problems. At the same time, we have a challenge in deploying the technology, which itself takes time and mobilization of resources from companies and participants in the marketplace. So long-term certainly can mean something in the order of 10 years. Speeding it up can be done in a variety of ways, and of course that's what the federal government is attempting to do in part of what we've described today in terms of providing certain kinds of market incentives, both financial and otherwise. Without getting into great detail, that's the general approach.

Ms Churley: So we're talking perhaps about more tax incentives and other instruments, realistically, to make sure that these kinds of renewable energy strategies fit into the existing marketplace. From what I understand from your brief presentation, the policies are driven by those kinds of tax incentives. In reality what you would have to look at is more of those incentives so that there's an easier time to get into the market. I know you're not from finance.

Mr Godin: Actually, with respect to renewable energy we have a range: there are tax incentives; there are actual programs; there's R&D funding. There's a range of instruments being used. Right now it's difficult to speculate what decision the government of Canada will take in the future, but if you look at what we did over the last year, our instructions, within the climate change file anyway, were to look at what the national consultation process had produced. That process took about 18 months. There were several tables set up, one on electricity, on buildings, on transportation and so on, and each of these tables produced option reports. With respect to renewables and electricity, in Action Plan 2000 really we looked at the option report from the electricity table. Measure 7 in that report is about emerging sources, non-emitting sources. There were about seven sub-measures proposed under that heading. In Action Plan 2000 we actually respond to four or five of these measures. So in the future we're certainly going to keep looking at measure 7 of this option report.

Mr Jerry J. Ouellette (Oshawa): Thanks for your presentation. Unfortunately we don't have a lot of time to go into the questions that we would all like to ask, but I'm going to give you an opportunity. Have you seen the August issue of Canadian Business, "The Next Energy Crisis"?

Mr Welsh: No, I haven't seen that.

Mr Jerry Ouellette: Maybe you'll want to see that. I'm going to give you an opportunity to respond to one of the key criticisms here that affects the federal government. It talks about the fact that we realistically haven't got a hope in hell of supplying the natural gas demands even with the new pipelines coming down. It says in here that Canada's National Energy Board just doesn't have a handle on the crucial information. What they're referring to are the gas deposits found throughout Canada and supplying the demand. What are the feds doing to take care of the concerns of the natural gas deposits in order to fulfill that demand?

Mr Godin: It would be better to ask the question of National Energy Board officials.

Mr Jerry Ouellette: I'm just asking the agencies that are here that essentially represent the federal government.

Mr Reilly-Roe: I have a little bit to say about that. The standard response is, "We're studying it," but we actually are studying it. We have a study with the US Department of Energy looking at long-term energy sources and demands, particularly related to transportation, which is a crucial area, and natural gas is in that bailiwick as well because transport may have to rely on liquids from natural gas. In the next 15 to 20 years they may be coming in. So we're very concerned about that and we need to study it on a continental basis, not just a Canadian basis, and we're doing that. What happens is that if we maintain our current growth patterns we start to deplete current resources in the next 30 to 40 years, and so we have to find replacements for conventional fuels. I guess the largest response to that is the development of the tar sands and the additional incentives and plans for tar sands plants coming on stream. That's going to make a huge difference on oil depletion in Canada.

Mr Ernie Parsons (Prince Edward-Hastings): My question seems rather mundane after that, but I'm interested in the greenhouse gas emissions slide. When you determine that—and I'm particularly intrigued by the ones for corn and cellulose—how far upstream do you go? Do you consider greenhouse gas emissions produced by planting the corn, by spraying the corn? Does it also include emissions involved in the production of the fertilizer and the production of the tractor and the production of the chemicals? How far up does it go?

Mr Reilly-Roe: It goes right through those, from producing fertilizer, from planting, from tractor emissions, tilling, every upstream emission we can think of, and the same for the conventional energy it is compared against. It also accounts for changing land uses. If you take soybeans out and put corn in, as the land use changes there is different fertilizer use. If you're taking marginal land and putting it into production, there's a different set of calculations for that. It's fairly complete.

The Chair: I think we need to move along. Thank you for coming in and presenting.

NORAMPAC, TRENTON DIVISION

The Chair: Our next presentation is Norampac, if they'd like to come forward. No interference on my part whatsoever, but coincidently the clerk arranged that someone from my riding would be the first delegation to present. Welcome.

Mr Gary Hodgins: Good morning. I'd like to thank Dr Galt and members of the committee for having our presentation this morning.

In order to keep up with the time constraint, we have a shortened presentation that's different from the handout. I suggest that people turn and look at the screen. It would be more informative and better to look at than me this morning. We'll go along that route in order to keep with our time.

My name is Gary Hodgins, general manager for Norampac in Trenton. My colleague is Dr Bob Rowbottom, senior technical director for the company. We're here this morning to talk about PulseEnhanced steam reforming, which is a low-impact technology for generating energy from biomass. The objective here is just to introduce you to our technology, which is destined to play a major role in the generation of energy from biomass with a low impact on the environment.

This is our Trenton mill, in Dr Galt's riding. The Trenton mill is one of 10 Norampac mills. Norampac is a joint-venture company of Domtar and Cascades, which are both wholly owned Canadian companies. We are the largest container board or cardboard box company in Canada and the eighth largest in North America. This particular mill has the distinction of being the first pulp and paper mill in Canada, or North America, to have zero process effluent, and it remains that way today. We're talking about cutting-edge gasification technology and we'll come to it in a minute and what it will do.

At the Trenton mill alone, and this is just one of 10 mills in our company—about 60 mills in Canada have the potential for this, and it's not just a pulp and paper technology. In our small mill, we will cut our greenhouse gas emissions by 11,000 tonnes per year and we'll cut our natural gas consumption by 6 million cubic metres. This is the potential for the commercial application of this biomass technology. These are very, very significant numbers for the type of industry we're in and the potential we have.

What is PulseEnhanced steam reforming? It is biomass reduction to energy. It is not incineration or partial oxidation. It's a gasification you carry out in a steam-reducing environment. The organics are converted to hydrogen and carbon monoxide, which are both fuels, and the carbon monoxide reacts with steam to produce more hydrogen. This is an endothermic reaction, which means you add heat to make the reaction occur. It's not exothermic like incineration, where you're burning. So it's a very significant difference from incineration.

0920

This is actually the PulseEnhanced steam reformer. This unit is going to be installed in Trenton—we start in October—and is about 60 feet high.

Gasification technology is not old technology. It's been around for a long time. It works. It has never been energy efficient. The trick in the reformer is, these are the heat exchangers—and we'll show you a picture in a minute—in which you add heat to a biomass that causes the steam reforming action to occur and reduce the biomass to what we call a reformate gas or product gas.

In the past, you had to add more energy to a gasifier than the energy you got out, so it was a net energy user. What they've done with PulseEnhanced is that the burners are twice as efficient as before, and you now produce twice as much gas as you need to run the unit, so 50% is available for export. This is what we call a reformate gas.

This technology works. We talk spent pulping liquors, the lignin and leftover fibres from the pulp mill. We have

our pulp and paper mill solid waste. As I say, we're a zero-effluent mill on the water side. This will put us very close to being at zero discharge on the solid waste side. The technology works with municipal solid waste, sewage sludge, agricultural waste, old tires. All these have been proven. It's any biomass. Our steam reformer will run at about 98% efficiency. So if you put in 100 tonnes of biomass, 98% of that biomass will get converted to a clean-burning fuel.

These are the actual heater units, which are being built at the company in Baltimore. This is the combustion chamber. And it's these special heaters that allow the efficiency to take place. This is the patentable part and the revolutionary part that's the breakthrough.

The gas that's produced by a steam reformer—these are the actual results. We have six weeks of testing around the clock. There are other companies involved in this. It produces primarily hydrogen, carbon monoxide and a methane gas, which is a very, very clean-burning fuel. This fuel—in the tests that have been done, and we'll show the full-scale size in a minute—produces less NO_x than a natural gas burner today. That will be from the biomass.

We will use that gas in a conventional natural gas boiler to generate steam for the Trenton mill. That's where our energy savings come and our emissions get lowered.

At present there's a German company purchasing a unit behind us that will take that reformate gas, burn it in a hydrogen turbine generator and generate electricity. That's the second stage. The third stage is to take that hydrogen gas and run it in a fuel cell.

The results you see here—this was commissioned by the Department of Energy in the United States, which has invested between $60 million and $80 million in this technology. They are building a plant in the United States, another paper mill, which will be about a year behind ours.

We actually took our black liquor from the mill, which is the lignin and the fines from the trees—it contains 30% of the mill effluent—ran it through the gasifier, took the gas that came off, ran it through a hydrogen fuel cell and generated electricity—the first in the world, and it was done at the Trenton plant operation.

This is the actual reformer vessel at Trenton—you can see the size of a man at the bottom. Those four round circles will be the four heaters. We have designed the unit to process 110 tonnes of biomass a day. The mill needs to run only 70 tonnes. We will use this as an opportunity, as a commercial test facility for the province or the country to demonstrate this technology for generating energy from biomass. That's the intent that we intend to go with.

These are the actual building drawings. This is a schematic of our engineering. We have a 3D part for drawing up. To give you an idea, the height of this is 60 feet. These are our evaporators. There's a boiler here that burns off the gas to generate the power for the mill.

All of this equipment is on order. These people are very anxious to get into the energy business and get things on a commercial scale. We have insisted, and it's part of our purchase agreement with them, that all the equipment must be built in Canada, so the boiler is presently being fabricated as we speak by Foster Wheeler in Niagara Falls. The steam reformer itself and all the technology—there are two firms. One is the potential of the shipbuilding company in Niagara Falls, or another firm in Niagara Falls. There are two of them in Canada. And the evaporator equipment will also be built in Canada. So there's the potential, when this technology takes off and gets demonstrated and people see it working and see the type of efficiencies we're talking, that it is a built-in-Canada solution.

In summary, PulseEnhanced steam reforming offers a capability to process a wide range of electrical power generation—in our case we'll use steam, but any generation—from biomass with a very low impact on the environment. The efficiencies: 98.5% is our guarantee with the company. The environmental impact: the huge reductions at the Trenton mill are similar to what will be achieved in other places.

The Germans are one unit behind us. Theirs will be strictly on sewage waste, waste from a town, tree trimmings, roots, all the things you're not allowed to landfill in Germany. They have achieved 95% efficiency on converting that from biomass to energy. They will run it through a turbine generator and generate electricity for the cities that generate the biomass.

The Americans have the pulp and paper mill in West Virginia, twice the size of the Trenton mill, and they are installing the same technology but they are about a year behind us.

As I say, for this commercial-scale demonstration, we're building it bigger than it needs to be. We want to be Ontario's and Canada's—we hope this is the Candu reactor for biomass and energy production. So it's a very thrilling story for us. It came from a different story, but this is the good-news side of the story.

The Chair: Thank you for your presentation, a very different direction on biomass. We have about two minutes per caucus, starting with the government side.

Mr John O'Toole (Durham): Thank you for your presentation. Do you burn paper sludge?

Mr Hodgins: No.

Mr O'Toole: What do you do with the sludge?

Mr Hodgins: The sludge right now—we look after lots of mills. Most sludge today is landfilled; that's where most of it goes. Some paper mills put it on for agricultural use, but in most paper mills the sludge from paper is landfilled.

Mr O'Toole: There's no chance that it could form part of this? It's celluloids and fibres.

Mr Hodgins: Yes. At the Trenton mill, the sludge—in all the tests and all the numbers I've talked about here, our sludge is part of the reforming process. It will go in the reformer. That's that 98% efficiency we talk about. It contains all the sludge from our mill. It will be the first

mill that has no sludge being hauled to a landfill. We'll generate energy for the plant for that, and we shut off our natural gas supply—less emissions.

Mr John Hastings (Etobicoke North): Without getting into great detail, does your company or the combination of companies here take advantage of existing financing, either through the feds' budget with the conservation renewable expense allowance, or is it all internally expensed?

Mr Hodgins: At this point in time the project is totally expensed internally. We have met with about four different government agencies. Actually, we meet this afternoon with TPC, which you saw this morning, but we are seeking financial help. As I said, we only needed a 70-tonne unit to run the plant and take care of all our solids but we bought a 110-tonne unit, again to allow for expansion. Also, we want to demonstrate this technology for Ontario and for Canada. We're building it in Ontario, it's going to run in Ontario, and the market down the road is just immense.

0930

The Chair: To the official opposition. No questions? Ms Churley.

Ms Churley: Thank you for your presentation. I just wanted to be clear on this because it's new technology to me and it's a very short presentation. Is there no waste generated at all that has to end up in landfill? There must be some.

Mr Hodgins: Yes. As I say, 98.5% is our number, Bob, for conversion?

Mr Bob Rowbottom: Carbon conversion.

Mr Hodgins: So in our plant we'll have about one and a half to two tonnes a day. The waste often is pure activated carbon, and at our point this will be landfilled. Other firms will sell that, as you can use that as a fuel, or that's the same stuff you use for water filters.

Ms Churley: So there will be no toxic waste in any way coming from this—

Mr Hodgins: No. This thing runs at 1,100 degrees, so the minute toxins that are in the waste are immediately gone, steam reformed.

Ms Churley: So unlike incineration of solid waste, which is something I object to, I am very excited about this. Obviously not everything can be treated in this way, but if we had an opportunity to expand this kind of technology along with doing things like more composting and other kinds of energy conservation and efficiency reforms, could we end up avoiding burning any kind of garbage?

Mr Hodgins: Yes. This is the major difference with this. We're going to use this technology in a pulp and paper application, but this is a biomass technology. The Germans will put straight biomass in it. It's designed for agricultural waste—it just loves that stuff—plastic, sewage. That's what it's made for.

The Chair: Thank you very much for a most interesting presentation, and best of luck with the project.

Mr Hodgins: We'll have Dr Galt at our dig with the shovel when we start next month.

The Chair: Who hasn't volunteered.

Mr Hodgins: Yes.

ADDINGTON HIGHLANDS ECONOMICS COMMITTEE

The Chair: We'll move on to the next presentation, Paul Isaacs from the Addington Highlands Economics Committee. Welcome. I think I saw you here much earlier this morning.

Mr Paul Isaacs: Yes, you did. I didn't know how long it would take, so I came down early.

The Chair: Thank you very much. You have a total of 20 minutes for presentation and questions following.

Mr Isaacs: Thank you for allowing us to present today. Our chair, Bill Brown, has been forced by a sudden illness in the family to send his regrets. He requests the committee's indulgence.

My name is Paul Isaacs, as has been mentioned. I'm the secretary of the committee and will be addressing you today on behalf of the committee.

The township of Addington Highlands occupies the northern half of the county of Lennox and Addington. As the name implies, it is an uplands area. The township contains the headwaters of three separate watersheds and has some of the highest elevations in eastern Ontario. Because wind speed increases with elevation and because the power output of a wind power generator increases dramatically with wind speed, Addington Highlands has some of the best wind power sites in all of eastern Ontario.

The township has another characteristic feature: crown land. In fact, Addington Highlands is over 70% crown land. The surrounding townships in Frontenac, Hastings and Renfrew counties are similar to Addington Highlands. Therefore, the large majority of the most promising sites for wind power generation in eastern Ontario are on crown land.

The Addington Highlands Economics Committee was struck by the township council to examine the economy of the municipality and make recommendations to council with respect to economic activity within the township. The seven members of the committee have a collective total of over 120 years of business experience. All of that experience has been accumulated by operating small businesses in a very demanding economic environment. There is no opportunity for waste and duplication in Addington Highlands. There is no opportunity for poor decision-making or failure to make hard-nosed business decisions on a daily basis.

The members of the economics committee are well aware of the provincial government's preference for private enterprise. The members of the committee obviously have a preference for private enterprise too. However, the business success of the members of the committee also indicates that committee members are obviously able to make the distinction between winning and losing business opportunities.

The collected experience of the Addington Highlands Economics Committee has brought the committee to the conclusion that without crown land sites, wind power generation in the eastern Ontario highlands region is a losing business proposition.

In corresponding with the provincial government, the committee has found that the policy position of the government of Ontario is that the province will not participate in developing wind power generation and that the municipality should form a public-private partnership in order to develop wind power generation capability; and that there is no provincial policy at all with respect to the use of crown land for siting wind power generators.

It is the position of the Addington Highlands Economics Committee that the provincial government insistence on public-private partnership will result in there being no wind power generation capacity at all developed in the eastern Ontario highlands region without the development of a policy that permits siting on crown land. It is the committee's position that the exclusion of 70% or more of the available sites precludes an adequate return on investment for commercial enterprises.

The Addington Highlands Economics Committee recommends that the alternative fuel sources select committee indicate to the provincial Legislature that wind power generation in the eastern Ontario highlands region depends on the current provincial policy vacuum being filled by a coherent policy with respect to the siting of wind power generators on crown land. Without such a policy, a valuable source of pollution-free power will remain needlessly unavailable to the people of Ontario.

Regarding the more general topic of alternative fuels, the economics committee would like to indicate to the alternative fuel sources select committee that all of the alternative fuels that are currently technically possible are fundamentally different from fossil and nuclear fuels.

Fossil and nuclear fuels are high-energy-density fuels. These fuels contain a great deal of energy per unit of volume and that makes their energy density high. The engineering consequence of high energy density is that a fuel can be brought to a single site in sufficient quantity to make multi-megawatt power generating stations possible. The huge power generating stations that we have in Ontario today would not be feasible without high-energy-density fuels.

The automobile also depends on high-energy-density fuels for its existence. The relatively heavy car cannot be propelled reasonable distances by a relatively small quantity of fuel unless the fuel has a high energy density. However, all of the currently available alternative fuels are low-energy-density fuels.

The consequences are profound. The steel head of a hammer cannot be replaced by a balsa wood head. Similarly, alternative fuels simply cannot serve as direct replacements for current fuels in existing power plants and vehicles. The use of alternative fuels will compel the energy generation infrastructure to change dramatically. The small number of very high power output generation stations that exist today will have to be replaced by a much larger number of lower power output generators. Similarly, today's transportation infrastructure cannot be made to function on low-energy-density alternative fuels.

Even nuclear fuels will be impacted by shifts to low-energy-density alternative fuels. Nuclear fuels must be mined, processed and transported. Currently, most of the activities required to create usable nuclear fuels use fossil fuels. As a result, nuclear fuels have high-energy-density fossil fuel dependencies. To be usable as fuels in the future, nuclear fuels will have to have fossil fuel dependencies removed from the infrastructure for the acquisition of nuclear fuels.

The Addington Highlands Economics Committee recommends that the alternative fuel sources select committee indicate to the provincial Legislature that alternative fuels are low-energy-density fuels that cannot serve as substitutes for high-energy-density fossil fuels in existing power generation and transportation infrastructures.

The existence of the alternative fuel sources select committee indicates that the Ontario Legislature is aware of the fact that conventional high-energy-density fossil fuel resources are being exhausted and that, within the foreseeable future, replacements will have to be found.

The economics committee is aware of large numbers of wind generators in California and in tiny Denmark. Even oil- and gas-rich Alberta has wind generators in the Pincher Creek region. Other jurisdictions have begun to develop low-energy-density infrastructures. The Addington Highlands Economics Committee feels that it is essential that Ontario do the same.

The committee would like to indicate to the select committee that a market-based shift to low-energy-density fuels will not begin to occur until the price of high-energy-density fuels causes the market to react. However, as we have already indicated, low-energy-density fuels will require significant changes in Ontario's energy infrastructure. These changes will require not only capital but time and manpower resources as well. If the Ontario Legislature and the government of Ontario wait for the market, other jurisdictions will have made government-mediated adjustments and Ontario will be left attempting to play catch-up.

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The Addington Highlands Economics Committee recommends that the alternative fuel sources committee indicate to the provincial Legislature that Ontario cannot afford to wait until market-based changes toward alternative low-energy-density fuel sources begin to occur, because other jurisdictions are already making government-mediated infrastructure adjustments toward an inevitable low-energy-density alternative fuels environment.

In conclusion, the Addington Highlands Economics Committee would like to indicate to the alternative fuels select committee that Legislatures and governments can make decisions and create policies that have the effect of directing the market in directions that the market would not take of its own accord. Other jurisdictions are currently making decisions and setting policies that will help

to position them to make the transition to a low-energy-density fuel environment. They are sacrificing a small competitive advantage today in anticipation of the need to gain competitive advantage or remain competitive tomorrow.

Energy is the driving force behind all other technologies. Without a competent energy infrastructure, no jurisdiction can support a technological base for its economy. As high-energy-density fuels become exhausted, the fate of every jurisdiction will depend not on its last-minute reaction but on its degree of preparation for the transition to a low-energy-density environment. That degree of preparation will be determined by the government of the jurisdiction in question—not the market.

The Addington Highlands Economics Committee believes it is unlikely that there is any more important legislative committee than the one we are addressing today. The decisions made by this committee and the subsequent and consequent decisions made by the Legislature and the government of Ontario will have a profound effect on the future of all Ontarians.

I thank you very much for allowing us to present.

The Chair: Thank you very much for a very thoughtful presentation. We have about two and a half, three minutes per caucus, beginning with the official opposition.

Mr Parsons: I lived in Cloyne for a couple of years and in fact met my wife there. So I think I have some sense of the region.

Have you had studies or do you have data showing—and I'm not sure how you measure the wind—the number of days that the wind blows in excess of five kilometres an hour or—

Mr Isaacs: The economics committee has done a preliminary study of that and the closest wind that we can find is Environment Canada for Ottawa. The average wind speed in Ottawa is 14 kilometres an hour. We expect higher speeds because we're higher elevations. We have some good hilltops in Addington Highlands. At 14 kilometres an hour and at current market electricity rates, the payback on a wind generator is about 20 years.

Mrs Marie Bountrogianni (Hamilton Mountain): An excellent presentation, thank you. You mentioned a few of the jurisdictions that are basically developing infrastructures for low energy density. What other jurisdictions? You said other jurisdictions have begun to develop low-energy-density infrastructures. What other jurisdictions did you have in mind that you favoured?

Mr Isaacs: I was mostly referring to wind power in this sense. It's the major technology that's available today to form substitute—especially for electricity generation, and that's the one that I was thinking of mostly.

Ms Churley: Thank you very much for your presentation. Can I ask you a bit more about the difficulties around crown land and what we need, as a committee, to specifically recommend be done?

Mr Isaacs: I don't know whether this is difficulty around crown land per se. The problem we have is that we approached the MNR and there's no specific policy with respect to wind power sites on crown land. Because the wind speeds in eastern Ontario are just marginal for a return on investment, the committee's internal decision was that we needed those crown land sites to have enough sites to make it commercially viable. If the crown decides that they're going to charge a great deal of money in order to do that siting, then that will probably make it to the point where nobody will wish to do that. The impacts in terms of the environment, in terms of the animals, are minimal, because the sites would be on the highest parts of the land and the amount of land that would be disrupted in order to put in wind power sites in eastern Ontario would be really minimal in the crown land areas. So this is a real opportunity.

Ms Churley: Are you in the process of talking with the ministry? Where are you at in the process of trying to get access to those lands?

Mr Isaacs: We have talked to the Ministry of Natural Resources, and they directed us to the Ministry of Energy, Science and Technology. We wrote to the Ministry of Energy, Science and Technology, and the Ministry of Energy, Science and Technology said there's no real policy in place now. There is apparently a crown land usage initiative that's being worked on by the MNR at the moment, but there's nothing in place right now.

Ms Churley: So that's the major thing that's holding you up?

Mr Isaacs: That's the major reason for our appearing here today.

Mr O'Toole: Thank you very much for your presentation. I appreciate the formal recommendations here, as well—they were well thought out—and the township for having the foresight to have an economic group like yours looking at rather technical applications of whatever assets you have in terms of resources.

With respect to looking at competition within the energy generation or power generation sector I think it's an important motive, and wind now has become a current topic, as well as biomass and a few other kinds of energy generation or power generation. I kind of concur with you that wind has been overlooked, whereas in other jurisdictions it's evident that it isn't nine cents a kilowatt when you can get a massive base working with the supply and the technology part of it.

How do you feel, though, about having the province, in its policy development specific to the crown land point that you're making, work in partnership with other consortiums? The government, as I see it, is not in the business of creating power; really, it's technical and other partnerships that should provide that. But in the sense of allowing the crown land to be an important part of its principal investment, do you think that is a possible policy direction that you would like to see this committee recommend, where we use the land base as our part of a partnership with OPG, or whoever, who then put in the technology and operate?

Mr Isaacs: Our wish, as an economics committee, is that that crown land could be used for wind power generation and that the crown does not decide to charge

such a fee that nobody will use it. We don't want to have the province in the business of generating power. That's not the issue. The issue is that there's land there that could be used by the people of Ontario to reduce the pollution in Ontario, and it doesn't harm the rest of the uses of that piece of crown land. So we think it should be opened up.

Mr O'Toole: Can you see any opposition to windmills or wind farms? I can see the lineup starting on the 401 with the signs and stuff. They'll be opposed to it, because it's very noisy, it obscures the landscape and it potentially could kill hawks or something.

Mr Isaacs: In terms of noise, there aren't that many people in the Addington Highlands to be bothered by the noise. The question of birds may come up. But from our point of view it's a trade-off. You're producing polluting power versus non-polluting power and you may lose a few birds along the way, but a lot of birds are killed running into buildings in downtown Toronto too. So I don't really think that the environment—

Mr O'Toole: Thank you.

The Chair: Thank you very much, Mr Isaacs, for a very thoughtful presentation. I also chair a task force on rural economic renewal. This really didn't come up before them, and I'm certainly going to make sure that this paper gets before that committee as well. Also, I grew up south of where you are, where the Lennox generating station sits, so it's kind of neat to have you coming before us. Thank you very much for an excellent presentation.

0950

STEVEN GUILBEAULT

The Chair: Our next presenter is Steven Guilbeault. We look forward to your presentation.

Mr Steven Guilbeault: Excellent. Thank you for inviting me here today. One of the most important factors is that you're a committee that's making decisions, you're researching the alternative energy possibilities that are out there, and you can't make one decision and not have it affect a lot of other areas of expertise. Through my presentation you'll learn a little bit better what I'm talking about. A few of my friends around Mattawa actually asked me to show up. Mattawa is in Mike's riding.

Dear committee members: you have a wonderful opportunity to make a difference in the lives of all Ontarians. By participating in this study of alternative energy sources, it is your actions that will impact on government policy for generations to come, let's hope. My ideas are, I guess, a point of attack where you can try and make the difference.

Ontario is presently writing a new curriculum, and it wouldn't be a very good idea to not use Ontario's new curriculum to inform our young people about the alternatives that are out there. So it would be a major bonus to include mini-solar-panel generating stations in each school. It would be a good idea. Kids could have hands-on learning at that time. Solar or wind—good ideas.

We should use TVO in the way it should be used, to support the government's educational policies. Obviously, they probably have before, but they should continue making productions that include alternative energies. I have some books over there that we'll pass around the table afterwards and we can actually peruse them and discuss them a little bit if we want. So TVO would be a great asset for what we're trying to accomplish here today.

Most of the suggestions that I'm making today are at absolutely no cost because the costs are already being incurred. It's not going to cost us anything else to get TVO to produce some more stuff, and it's right in line with what we're doing. It won't cost us any more to educate our kids, because that's what we're doing already. Schools buy computers; schools can buy solar panels. It's just part of the hardware.

Our libraries here in Ontario do have a system for helping people order books through their network, but through my conversations with librarians, they have a hard time explaining to people what these actual books are. That's what I'm passing around here, these books. How is a person to know what is really out there, what the subject matter is, on a little blurb? If you as a committee suggest that the librarians can get this together as a special project and develop a complete category on alternative energy sources for the man on the street, again, the cost is none.

If you thought it was a good idea to develop alternative energy sources, I envision a system similar to the Ontario student assistance program—name it something else, obviously. But presently, an average family is spending approximately $150 to $200 a month on hydroelectricity. This could easily be turned over to a bank where they are actually paying off their solar panel systems, their generating systems for their private homes. I've included some numbers. They're rough numbers; I realize that. Use some common sense on that. But if you do make some kind of system where people can get loans, it should definitely be self-sustaining, with no government handouts in it. It's not really necessary. People are already spending this money for their electric bills.

I'm an advocate of straw bale building systems, and one of the books actually deals with that. I've participated in a workshop and I plan on building my own home next year of straw. To reach the efficiency it can achieve, and I believe it's something like R-52, it's incredible, you'd get the same insulation factor from the regular—what do they usually use? It's glass insulation.

Interjection: Fibreglass.

Mr Guilbeault: Yes. You'd get the same insulating factor from that, but you'd have to have the same width of wall. It's one of the characteristics of building with bales that you have thick walls. They also dampen the sound from the exterior. So the use of straw bales in construction is gaining more acceptance every year. It is

a renewable resource, and in studies it has outperformed traditional wood frames. By encouraging the use of straw bales, or for that matter any other alternative, which could be adobe or stacked wood, the very nature of these building materials makes them highly efficient, so you're using less energy to start.

When you're going to be building buildings, Ontario needs some social housing. This is where I'm getting at how you make one decision and it affects a lot of other areas. If Ontario wanted to continue building highly efficient homes for people who are in need, straw bale is highly efficient, very quick to put up, and people are really happy in them. It's about half the cost going up. The outside walls don't cost a lot. You're putting a roof on it, you're putting hardwood floors or whatever on the inside, and you've got the same plumbing, but you are looking at about half the cost for social housing.

Really look at that book. Take down the name of it. There are companies here in Ontario that build with this material. I'm sure they'd love to give you some pointers on how to build them.

Emergency shelter: one of the articles that I'm passing around, which I took from the newspaper, says that apparently Ontario's not ready for an emergency. This straw bale stuff goes up really quick and people can be comfortable in it. It's very comfortable stuff. If we used it for social housing or for emergency housing, it would be very useful.

Again using the assets that we actually have—there's no cost, again—in informing people about government policies on alternative energy choices, On magazine would be a good choice for that. I read it all the time, or at least I try to. It's there for us. It's not costing us anything to get the word out on government policy. When people understand it, then they can go along with it.

For new businesses in Ontario, the alternative energy sector is the way of the future, to be assembling solar panels, assembling the wind generators, to be doing some of this research. If we're going to be trying to attract people to set up their businesses here in Ontario, let's look at this and get them to come here.

Following here, I've got two open invitations for you. You can either show up personally or as a whole group. Some of the people of Mattawa have invited you, the whole committee, to show up and come on over with Mike, if you'd like that, and visit a house that's completely off the grid. They'd be happy to speak to you about the choices they've made and how it affects their lives. They are energy misers, and it hasn't really affected their lives in any negative sense. They enjoy themselves, and it's quite possible that once the word is out, more people in Ontario can make these choices as well.

The second invitation I'm going to offer you is that next year I'm going to be building my own home out of straw bales. I haven't actually decided whether it's going to be post and beam and just infill the walls. Purists in this building construction method prefer to have structural walls made of the straw bales. They're trying to convince me to do that, and I think it's a wonderful opportunity to test it out. So if you would like to get hold of me or see that other house, we'll put some mud in your hands—actually, you cover the exterior and interior of the walls with cement. So it's very possible, and you'll see in the book I passed around that it's an amazing technology. There are homes, I believe, in Nebraska that are over 150 years old and suffering nothing from the elements.

In closing, I would like to remind the committee that just because we live in North America, it doesn't give us the right to have unlimited amounts of energy to waste. If we don't start thinking of using our energy resources more wisely, our children won't either. That's why we've got to teach them in school. The example has to be set by someone, and I suggest that we start. The use of solar panels to collect the sun's energy, with all the apparatus required, will create jobs for Ontarians. These systems are very low maintenance. Practically anybody can use them; they're really simple. They are a practical solution to the building of big, expensive hydroelectric dams or the even more expensive and environmentally unfriendly nuclear generators that last for millennia.

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In our schools and homes we try to teach our children the three Rs: reduce, reuse and recycle. I would like to add a fourth R: rethink—rethink our needs. We don't need unlimited access to electricity. It's expensive for us and for the environment. We need to become energy misers. There are certain industries that require great amounts of energy, but let them use it and let the person on the street use just what they need.

Our present government has established a reputation for quick, effective and efficient change. This committee will report its findings and perhaps suggest an appropriate course of action. Please don't regulate the industry to death. If you regulate too much, then the average guy on the street won't be able to do anything; his hands are tied. Right now it's pretty much the wild west. It's probably a good way to keep it. Take a common-sense approach.

The Chair: Thank you very much for a very interesting presentation. We have about 30 seconds for either a quick statement or a quick question from each caucus.

Mrs Bountrogianni: Thank you for your presentation. I do agree on using our curriculum and our libraries to get the messages out to our kids. It drives me crazy when I come home and there are lights on in empty rooms or the computer is on.

You mentioned using straw bale for social housing plans, that there will be only small lifestyle changes, nothing that would cause undue hardship. As someone who comes from a very computer-oriented family, with my kids and so forth, what do you mean by that? What sort of lifestyle changes would have to be made?

Mr Guilbeault: When you're using computers and something that would take a lot of power like that, you're probably going to get a small generator on the side. When you're choosing to burn electricity, you're making

a conscious choice; it's not just flicking a switch. You're going to have to do a little bit of extra work for it. So that's turning on the generator.

Ms Churley: There's no time to ask you questions, but I just wanted to take the opportunity to thank you as a private citizen for coming in and giving us your views, because in these kinds of often highly technical committees, there are a lot of groups and government organizations, so it was quite refreshing. I'm very pleased to see private citizens like you taking the time to come and inform us of what you're doing as an individual and a family to help deal with the difficulties around energy consumption. Thank you.

Mr Hastings: Mr Guilbeault, how would this work where your building codes require not using this material? How are you going to get your house built where you're going to build it without major problems with either Hydro or the building people?

Mr Guilbeault: There have been experiments all over the world and here in Ontario actually there are a few straw bale homes already constructed. If you get hold of Chris Magwood—he lives just south of Algonquin Park somewhere—he's building with Camel's Back Construction, and he's building stuff all over the province.

Mr Hastings: Even in urban Ontario?

Mr Guilbeault: Even in urban Ontario.

The Chair: Our time has run out. Thank you for a very interesting presentation.

IOGEN CORP

The Chair: We now move on to the next delegation. Is Jeff Passmore present? Please come forward. As you begin, state your name for the record, and we have a total of 20 minutes for your presentation and questions and answers.

Mr Jeff Passmore: Thank you very much to the committee for allowing me to appear. My name is Jeff Passmore, executive vice-president, Iogen Corp. I appreciate the opportunity to be here.

I have circulated a handout with some overheads which I'll speak to in a minute, and a company brochure and a photograph.

I actually asked to appear before the committee largely because of the frustration I was feeling this summer while driving in my vehicle and listening to the radio and reading in the newspaper about the number of days of smog we've had in Ontario—I think 17 days of smog south of Thunder Bay—and smog warnings. The solution is so obvious, it's staring us in the face, and it's to put oxygen in your gasoline. It can go in cars today. Ethanol is an oxygenate. They do it in the States; they've been doing it since the Clean Air Act in 1990. So I just wanted to start off by saying that the committee hearings are very timely.

I'm going to go through this very quickly so that we can get into the discussion and question-and-answer period and talk about this.

On each of these slides there's probably one key point. The first one is to simply to position Iogen: who is this company? We are the world-leading company—and I say that not because we say it but because the US Department of Energy says it and a whole bunch of other people that are in the business say it—in terms of making ethanol from a new source: fibre or cellulose. All of the ethanol we consume today comes from grain, primarily corn or wheat. In the US, 99% comes from corn; in Canada there are corn and wheat plants. We wouldn't be making the ethanol from the grain portion of the plant but rather the fibre portion of the plant, so the straw or, in the case of corn, cobs, stalks and leaves. We have spent about $80 million in the last 20 years developing this technology, and we've just completed construction of a $35-million demonstration plant, which is the picture you have in your packages.

The second slide is simply to then situate ethanol. We probably already all know this, but this is not some weird fuel; there are two trillion miles of driving experience with ethanol. It's used widely in Brazil and in the US and it is used in Canada. In Ontario, Sunoco is the major user of ethanol. Every grade of gasoline you buy at a Sunoco station, whether it's 87, 89, 92 or 94 octane, has just under 10% ethanol in it. In Brazil, of course, they run on E24 or E95.

People sometimes come up to us at our trade show booth and ask, "How come my owner's manual says I cannot put ethanol in my vehicle?" It does not say that. It says you cannot put methanol in your vehicle, and there's often confusion between the two fuels. That's why that owner's manual message from General Motors is in the brochure.

The next overhead is simply a shot not of a low-level blend car but of a flexible fuel car. That's an E85, as it's referred to euphemistically, an E85 Ford Taurus. I drive one. There are over two million of them on the road in the US. A year and a half ago when I went to order one from a Ford dealership here in Ottawa and I said I wanted a flexible-fuel vehicle, they said, "What's that?" Again, it's driven by regulation in the US. In that case, it's driven by CAFE standards—corporate average fuel economy. Across the vehicle fleet in the US you must achieve an average fuel economy, I think it's 28 miles a gallon, and you get a credit for alternative-fuelled vehicles against your average fuel economy. Of course, car companies like GM and Ford and Chrysler are increasingly coming out with these flex-fuel vehicles because everybody's buying SUVs, which is throwing the average fuel economy into the toilet.

These cars are not complicated. This is a normal Ford Taurus. It has a $100 part which is an oxygen sensor. It's not an after-market conversion. These are what's called original equipment manufacturer and basically it's one tank, no dial to throw or switch to turn. If I can't fill up with the E85—and there's only one place in Ottawa that I can—then if I just put regular gasoline in the vehicle I'm driving on E41 or E17—I haven't got a clue. It doesn't matter; the car doesn't care. The oxygen sensor simply

tells the fuel injection what fuel mix it's burning and makes the adjustments automatically. It's in the onboard computer system.

1010

By the way, in Ontario that car is cheaper so Ontario has done one thing right so far, which is to say that if you buy an alternate-fuelled vehicle in Ontario, the Ontario government waives the PST up to a maximum of $1000. So, with that car, when people say to me, "Didn't you have to pay more for it," it actually cost me $1,000 less than if I'd bought the Ford Taurus non-flex-fuel option.

The next couple of overheads are simply putting it in the environment and public health perspective. I won't read them but it talks about reduction in CO, reduction in CO_2, reduction in NO_x, reduction in benzene and other carcinogens. The following slide talks about the Clean Air Act, the oxygenated fuels program and the reformulated gasoline program in the US.

It comes as a surprise to a lot of Canadians to learn that in this area, at least, we are way behind the Americans. Toronto and Vancouver would be off-side with the Clean Air Act in the US. The way they've dealt with it in places like Chicago is to put ethanol in the gasoline. Chicago, surprisingly, has cleaner air than Toronto does, and it's because 90% of the gasoline in Chicago under the reformulated gasoline program has ethanol in it.

The next slide is showing what is unique then about cellulose ethanol. I described that Iogen basically is not going to make ethanol from grain but rather from the fibre portion, and you can see that the product is the product, ethanol is ethanol, but what's unique about cellulose ethanol is the fact that with respect to greenhouse gas emissions they are essentially net zero. This is not our work. We don't have the capability of doing these sorts of lifecycle analyses at Iogen, and if we did, no one would believe us anyway. This is the work of the US Department of Energy, and you can see the comparative full life cycle CO_2 emissions from gasoline, ethanol from grain, and ethanol from biomass or bioethanol.

Now, I would say that with respect to this ethanol from corn, 10.2, that assumes coal-fired generation for running the facility. If you had natural gas generation running the facility like the plant in Chatham, Ontario, the number would be down there around seven as opposed to 10.2. So slightly less but certainly not anywhere near where you are with cellulose.

The next slide has two messages in it. One is, "Don't implement a $100 solution if a $20 solution is available." You can see the various costs there associated with everything from hybrid vehicles to variable valve timing to bioethanol to reduced aerodynamic drag. Again, most of these are US figures, but the point here is that ethanol is an option which is well within the range of pursuing.

There's a second message in this slide. We often get the comment, in some cases from big oil but others, that ethanol is subsidized because it does not pay excise taxes. My answer to that charge is, no, ethanol is not competing against gasoline; ethanol is competing against alternatives to gasoline. So if you were looking at alternatives to gasoline and ways to reduce carbon monoxide and carbon dioxide emissions, then you're looking at clean vehicles, energy efficiency and energy conservation, all of which are great ideas. But when Ford puts aluminum in a vehicle and hence gets better mileage to the gallon, and therefore reduces gasoline consumption and hence there are forgone revenues to government, nobody says, "Oh my gosh, Ford's putting aluminum in vehicles. We'd better tax it because there are forgone revenues to government." Or when I ride my bicycle to work instead of taking my car, nobody says, "Jeff consumed less gasoline today, therefore we better tax bicycles." The point is that ethanol is competing against alternatives to gasoline, not gasoline, so why would you put a gasoline tax on something that's not gasoline. That's the message in that slide.

The next slide basically is telling you what the EU is trying to do. The European Union is again taking the vehicle approach, although we've certainly seen, particularly in the UK, they've just come out with a green fuels challenge eight months ago. You can see that since 1985, we've achieved very little result in terms of CO_2 emissions from taking the vehicle approach. They want to get the CO_2 emissions down a further 25%, down to 5.9 litres per 100 kilometres. That is going to cost an enormous amount of money and it is going to take a long time. The fact of the matter is that you can achieve a lot of that by putting ethanol in your vehicles today. I should say, not only is the infrastructure there, there's no infrastructure issue; it's already happening. As I say, Sunoco's doing it in Ontario, and Mohawk and Husky are doing it out west. So there's no infrastructure issue involved here. It fits easily into the existing infrastructure.

The next group of slides simply says what's been happening in the US. The first one is simply to say that there's the growth of the United States ethanol industry in grain, essentially six billion litres a year of ethanol made now, and it is going to grow enormously even after this, simply because, as you probably are aware, there has been a problem with one of the other oxygenates in the US, something called MTBE, methyl tertiary-butyl ether, and that has been banned in California and will be phased out by 2004-05. So California went to the federal government and asked for an oxygenate waiver. They asked Clinton and then they asked Bush. Bush denied the waiver, so the only oxygenate remaining to use is ethanol, so there is going to be enormous further growth in the ethanol industry in the US.

How are they going to get that ethanol? Some of the growth obviously is going to continue to come from grain, but the next slide indicates that Iogen isn't just having some kind of hallucination here when it thinks that the future is cellulosic ethanol. This is a scenario from the US Department of Energy which indicates that by 2005 they plan to have a billion gallons a year of ethanol, and by 2010, three billion gallons of cellulose ethanol. Cheney's energy future is somewhat less ambitious in that he would like to see five billion gallons, two

billion gallons of which would be from cellulose by 2010.

People have asked me, since George Bush decided to pull out of the Kyoto agreement, whether that had a negative effect on CO_2 emission reduction technologies. The answer with respect to biofuels is no. I have the President's request to Congress there, and you can go down and see that I've boxed the biofuels line. The appropriations were $38 million in 2000, $46 million in 2001, and he's asked for $43 million in 2002. As you know, the way the US budget system works, it's not like here, federally, where Paul Martin stands up and reads the budget and it's essentially law. That is his request. The response he's had back from the House of Representatives is on the next page. He's asked for $43 million and the House has recommended $53 million and the Senate has actually come out with a figure, which I didn't have when I made this note to myself, somewhere in the $50-million range. So that will then go into committee and discussion to be resolved over the course of the fall. But the point is that they have identified cellulose ethanol as a huge area of need and they are spending the resources to go after it. So you've got both a fiscal environment that will make it happen and a regulatory environment that will make it happen. By "fiscal" I mean that it's excise-tax-exempt in the US. The regulatory environment is things like the Clean Air Act and the minimum oxygen requirement and CAFE standards, and you have the money in the program to lead to the technology development.

The last two pages are simply to say that the same thing is going on in the European Union. There will be a directive issued in September by Brussels to the 15 member states indicating that they must put a certain percentage of biofuels—and I believe it's graduated up to 5.75% of biofuels—in gasoline by 2010. Of course, the way it works in the European Union is that Brussels comes out with a directive and the individual member states have to abide by it, but they can abide by it according to their own means and mechanisms.

The only other thing is the corporate brochure, which I'm happy to answer any questions on. It does indicate what our process is, but I don't want to get into chemistry here this morning. It also indicates a picture of the life cycle analysis of the CO_2 emissions, that essentially emissions from vehicles and running our plant are stored in next year's crop. That's what crops do, of course: they fix carbon to grow, and that crop is then turned into next year's ethanol. The photograph you have is a picture of a plant out on Hunt Club Road at the airport here in Ottawa which is the ethanol demonstration plant that we are just in the process of commissioning. I think I'd like to stop there and take any questions.

The Chair: Thank you very much. We have approximately a minute and a half per caucus, beginning with the NDP, or the third party.

Ms Churley: Do you always have to say the "third party?"

The Chair: We'll just say "Ms Churley."

1020

Ms Churley: Thank you very much for a very interesting presentation. Can I ask you a question? What's the difference between using the actual grain and the plant?

Mr Passmore: The processes are somewhat similar. We both use enzymes, although it's a slightly different enzyme. I think one of the biggest differences is that right now there is a surplus of straw in places like western Canada and in the US Midwest. When I was a kid growing up in Saskatchewan, farmers used to burn their fields to get rid of the straw. This is increasingly frowned upon because of the pollution associated with it. So farmers are looking for somewhere to make use of this straw. But the other main difference, as I mentioned, is that on a CO_2 basis, if you're talking about greenhouse gases, the CO_2 emission reductions from ethanol, from grain, are in the 30% to 40% range, whereas in ethanol from cellulose they're in the greater-than-90% range.

Ms Churley: One other quick question: is there large pesticide use in the growing of the corn?

Mr Passmore: There is pesticide and chemical use in the growing of the grain, yes, but that is used to grow the grain. You still have the straw left over at the end of the process. So the question is what to do with this material, and we've developed a way for turning it into ethanol.

Mr Steve Gilchrist (Scarborough East): I appreciate your presentation this morning, Mr Passmore. We're charged with looking at options, obviously, for the future, and that can be broken down into short-term and long-term goals and objectives. What I'm struck by in terms of trying to contrast the EU, the US and the Canadian positions right now and what we heard yesterday when we had presentations from all the ministries in the Ontario government is that the biggest problem with ethanol right now would appear to be supply. We are a net importer, according to the ministry. I wonder if you might give your thoughts on the relationship between a decision we might make in terms of regulating an increased use of ethanol to achieve the good ends that you're proposing against the fact that today that would mean exporting dollars out of the country. How fast can we ramp up production realistically in this province and in this country? Do you have any other thoughts on not just how fast, but where, and using which specific materials?

Mr Passmore: First of all, yes, I think ethanol is an option. For the present, although you're right that we do import, I think the opportunity to import is going to become less and less in the sense that the Americans are going to need all of their own ethanol to meet the phase-out of MTBE.

If Ontario, for example, decided that it was going to go to a minimum amount of ethanol in gasoline, it would have to be something that would be ramped in over a period, 2008-10, somewhere in that time horizon. Also, I think you have to recognize that with respect to the type of ethanol we're talking about, which is cellulose, we present it to Ontario as a health and environment and high-tech company in Ontario that wants to get into the export market. If you're thinking this is going to help

Ontario farmers because they can sell us their straw and their corn stover, most of the resource is in western Canada. There are five million acres of land farmed in Ontario. There are 32 million acres of land farmed in Saskatchewan. So if we're thinking about Ontario going to a large percentage of ethanol, there's going to have to be interprovincial trade of the product. It won't be imported from the US. There's lots of interprovincial trade of oil now, so there's going to be interprovincial trade of ethanol. Was there another part to your question?

Mr O'Toole: Switchgrass: is that illegal?

Mr Passmore: Switchgrass has been identified by the US Department of Agriculture as the dedicated crop of choice in the US Midwest. In other words, once you've finished—and you would never exhaust it, but if you're talking about getting billions of litres of material, farmers may decide, "I'm going to get out of wheat and grow switchgrass," because the yields per acre are so much higher. Does switchgrass grow in southern Ontario? Yes, but I don't know what the revenues would be compared to selling corn, for example. You would have to do that tradeoff.

The Chair: We're going to have to move along. Maybe we could grow weeds and use that as cellulose. I'm thinking of big weeds.

Mr Passmore: This is a big weed. This is a weed that gets you about three tonnes an acre of material.

Mrs Bountrogianni: That's excellent, a very interesting and informative presentation. You may have said it and I may have missed it, but what numbers are we looking at with flexible fuel vehicles in Canada or Ontario, to your knowledge?

Mr Passmore: How many are there?

Mrs Bountrogianni: Yes.

Mr Passmore: The federal government has about 45 or 50 of them. Natural Resources Canada has the most; it has 24 or 25. Agriculture Canada has got a number. Environment Canada has two or three. They are very small numbers, but the interesting thing is, I think a lot of people are driving flexible fuel vehicles and don't know it, because of course if you're talking about the original equipment manufacturer, they're just putting this oxygen sensor in cars, but they're not selling them as flex-fuel vehicles except in the US, because what's the point? I was meeting with officials from the government of Manitoba yesterday. They estimate there are probably 20,000 flexible fuel vehicles in Manitoba, but the owners don't know that they can take ethanol—the 85% ethanol.

The Chair: Thank you very much for a most interesting presentation. Best of luck with your project.

We will now call on the—

Mr Passmore: Can I just say, Mr Chairman, that you're all invited out for a plant tour any time any of you are back in Ottawa.

The Chair: Super. Thank you very much.

CANADIAN NATURAL GAS VEHICLE ALLIANCE

The Chair: The next presenter is Michael McNeil, president, Canadian Natural Gas Vehicle Alliance. Please state your name, and you have 20 minutes for presentation and questions and answers.

Mr Michael McNeil: Thanks very much. And if you think the last presentation was great, this one is just superb, not necessarily in the presentation and the presenter, but certainly in the vehicle I am about to describe for you.

I am from the Canadian Natural Gas Vehicle Alliance. I believe you have a set of overheads with you. I was going to make a PowerPoint presentation, but I think this may be an easier and faster way to go through it.

The Natural Gas Vehicle Alliance was formed in 1995. We are basically gas utilities from across the country and manufacturers, OEMs and suppliers of natural gas vehicle components and services. As an alliance—and let's not get the Canadian Alliance mixed up here; this is NGV Alliance—we try to influence positively the way in which NGV is regarded as an alternative fuel, and we deliver the message of its economic, environmental and societal benefits.

As we know, this year in Ontario alone we have suffered 23 smog alert days. I don't think that is particularly acceptable, and given that the smog alert days are on the increase, I dread to think of what's going to happen next year and the year after and continuing on as we go through. Some of the headlines that were carried in the papers this year, "Worst of the Smog is Yet to Come" and that kind of thing, are very foreboding.

One of the things of course that happens with smog and with pollution is the cost to human health. We have the OMA now estimating that there are 1,900 Ontarians alone who die prematurely because of smog exposure. We have increasing levels of pollutants that have been shown to increase asthma symptoms, chronic bronchitis, respiratory hospital admissions, emergency room visits, acute respiratory problems, and the list goes on.

Recent studies on diesel—these are from gasoline and diesel—exhaust have shown that diesel emissions are in fact carcinogenic and do cause cancer.

We do have a solution on the next slide. It's an Ontario solution, and that is natural gas vehicles. I also emphasize for justice's sake that all alternative fuels offer certain qualities and should be considered in the whole equation.

Alternative fuels are a group. They include such things as ethanol, cellulosic or other; they include natural gas; they include propane; they include hydrogen. They include a whole host of alternative fuels that this group is charged with looking at. I know that transportation constitutes only a small part of your review, but it is a very, very important part to the citizens of Ontario.

The environmental benefits of NGV—and they are understated by Natural Resources Canada—for example, with volatile organic compounds there's a reduction of

93% over gasoline. Particulate matter is 89%, and in fact the only particulate matter that enters into the exhaust is that which comes from the oil which is lubricating the engine itself. Sulphur is reduced by 63% over the top gasoline available on the market today. Carbon monoxide is down by 74%. NO_x is down by 43%. And given Ontario's charge to co-operate with the federal government and work toward the GHG reductions and the Kyoto Protocol, carbon dioxide is reduced 23% and beyond.

The environmental benefits for Ontario alone—say that we had 1,000 NGVs out there in a taxi fleet. You're looking at 91.56 tonnes of VOC reduced each year as a result of those 1,000 taxis in service. If you look at the provincial fleet, which does a lot less driving, you're still looking at 19.6 tonnes of VOC. And of course the list goes on all the way down.

Carbon dioxide: a very inexpensive way on a cost-per-tonne basis to eliminate carbon dioxide is through natural gas vehicles. We're looking here at 9,639 tonnes of carbon dioxide in a taxi fleet alone per thousand NGVs.

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If we move along to Ontario right now, there are close to 13,000 NGVs in service. We probably have close to 40,000 across the country, primarily in major urban centres like Vancouver, Calgary and—well, basically major cities across the country. All North American automakers right now, the OEMs, are making or assembling natural gas vehicles. It is state-of-the-art technology and that means that it comes warranteed; it is reliable. It's certainly not the vehicles of the past where conversions of propane gave us a bad name and conversions of natural gas gave us a bad name. Those days are gone.

In terms of the types of vehicles, there are dedicated vehicles and there are bi-fuel vehicles. The dedicated that are made on the production line today are the Crown Victoria; the Ford E series, the vans; the F-150s, the F-250s, all the pickup trucks; the E series cutaway, which is for shuttle bus or box configuration—the list goes on again. Bi-fuels are primarily General Motors' products, although the Ford F series does have a bi-fuel. But Chevy Cavaliers and Silverados, the Sierra—all the GM lines carry bi-fuels. That means that it operates on natural gas first and then it defaults to gasoline, if you were to run out of natural gas.

In terms of refuelling, the alliance and the industry members have done a tremendous job in being able to overcome one of the barriers of infrastructure, and that is that in Ontario right now there are over 66—in fact, I think it's now 67 as we speak, there's another one being built, or 68—self-serve public service stations, which you drive into, attach your vehicle to the hose with the nozzle and walk away. Two or three minutes later you come back and it's filled up. There's an automatic shutoff system. It's extremely safe. There's probably no safer fuel available than natural gas.

There are 22 of these stations in the GTA alone. There are 50 to 100 private stations which have small compression units, at a stockyard or some kind of a car yard, where a manufacturer may have his or her entire fleet running on natural gas vehicles, or courier services or taxis. They establish a small compression station of their own and they refuel at that.

There are 1,500 vehicle refuelling appliances. One of the other barriers that we got over was the fact that it was inconvenient to refuel; 1,500 vehicle refuelling appliances means that there are 1,500 individuals who can fill up at home or at their office or someplace which basically will house an apparatus the same size as an air conditioner. It's an appliance that attaches straight on to the gas pipeline. It compresses it and will give you a timed fill over six or eight hours or it will give you a fast fill if you have a cascade system.

Today we have some existing government incentives. We have the Ontario PST rebate referred to by Jeff of $1,000 maximum. We have the federal MDIP program which is due to expire next year, come February. That MDIP program was actually a $150-million or $200-million fund which was given to the federal government by the Alberta gas producers about 15 years ago. It asked the federal government to be custodian of that money and to dish it out in accordance with finding new ways in which to market Alberta natural gas. That fund has now dwindled down to approximately $4 million. Natural gas vehicles are the last benefactor of that fund, and we anticipate that the fund will be either exhausted or terminated come February next year.

The Ontario fuel tax exemption of 14.7 cents is a welcome relief, of course, for natural gas, as is the federal fuel excise tax exemption of 10%.

We have a tremendous industry base in Ontario, which is made up of auto plants, the alternative fuel research facilities, distribution, manufacturing and other NGV industries within Ontario. They include the major manufacturers; in fact, one thing this committee should know is that the expertise for alternative fuels, particularly for natural gas vehicles, is located and centred in the three auto manufacturers headquartered here in Canada for all of North America. That means that Oshawa, Oakville and Windsor house the expertise for alternative fuels and NGV technology resident here in Ontario and in fact in Canada.

There are still a couple of barriers to NGV which we need assistance in trying to overcome. Those barriers include the higher premium cost of a natural gas vehicle, because it is a different fuelling system. It does take about $7,000 to $8,000 more in terms of producing a vehicle off the production line and therefore there is a higher charge to that vehicle. At this point, the incentives that are applied by government and by industry and by utility companies, including Ontario, bring the cost down to about $2,000, which can be made up in fuel savings over the course of a year or less, depending on the amount the person drives. Nevertheless, from a perceptual point of view, that $2,000 or $2,500 still represents a major barrier to a fleet manager saying, "I want to bring natural gas vehicles into this fleet." The higher premium cost, therefore, is one of the last remaining

barriers, as is the behavioural or resistance-to-change attitude of drivers.

What we are recommending therefore is that this committee take back to the Legislature, and discuss very fully, the enactment of an alternative fuel vehicle procurement act. I speak, I believe, on behalf of all the alternative fuel industry when I say we would love to have in Ontario a procurement policy where your fleets for your departments are aggressively going out and purchasing alternative fuel vehicles. They are convenient, the barriers have been knocked down; there is no reason not to except for the departments themselves finding reasons not to. We have found that the federal government has an act such as that, but it is toothless, it's weak and it has all sorts of escape clauses in it, which means that the federal government has not really performed up to what most people thought the Alternative Fuels Act could do with the federal fleet.

In addition to enacting that kind of a procurement policy, be it an act or not, we would also like to see you provide a full PST rebate on NGV purchases. That full PST rebate will not cost the Ontario treasury a tremendous amount of dollars. It will only be an additional, say, $1,100 per vehicle and we're only talking in the neighbourhood of maybe 1,500 to 2,000, maybe 3,000, and as time goes on, maybe 5,000 or 10,000 vehicles. That is not a huge dent into the Ontario treasury and we would like to see that actually occur. The finance department and the environment department, to my understanding, are both behind that kind of initiative to increase that PST rebate. We would support that and would ask you to take that under consideration, as well, as a recommendation from this committee.

We'd also like you to start to think outside of the box or perhaps outside of this little square that we have here. We want to encourage some programs which are going to encourage people to pick up an alternative fuel vehicle and drive it. Such things that you have within the power or the scope of the Ontario government are fee-free access to provincial parks and reduced fees on the 400 series highways, particularly the 407, for an alternative vehicle. We do have examples of that occurring in British Columbia, we have that occurring in California, and in those states where alternative fuel vehicles are well thought of and are well along the way in terms of introducing into fleet use particularly, but into the general public as well.

We'd also like your support for such programs as the Metro Toronto taxi commission. They have extended the life of a taxicab by two years if it's a natural gas vehicle. A five-year life is allowed for a taxicab in Toronto, seven years if it's a natural gas vehicle. The reason for that, plain and simple: emissions.

In terms of supporting another program, we are presenting to the Ontario government, but particularly to the municipalities across the country, a concept paper on a program that I'm calling the Clear the Air program. What I would like to try and do is to have two objectives of this program come through the Federation of Canadian Municipalities and perhaps tap into some of the green funds that they have, the objectives being to improve air quality across the country and to provide a cost-effective program wherein municipal fleets can purchase new NGVs to replace gasoline or diesel vehicles, and the way in which they can do that is on a repayable—from the fuel-savings point of view, be able to repay a loan for a fifth vehicle if they were to buy four. So they would basically be getting five vehicles for the price of four, and over the course of the first year or year and a half, depending on how far they drive those vehicles, it can be repaid by the fuel cost savings.

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Conclusions: NGVs afford Ontario the ability to lessen its dependence on petroleum-based fossil fuels of gasoline and diesel. Ontario can lead the way to a gaseous-fuel future by supporting NGV today, technology which is ready today and used today and proven today. When I say "a gaseous future," we are all looking to a hydrogen economy 10, 15, 20 or 25 years from now. Natural gas is probably the best feedstock available. CH_4 has four molecules of hydrogen in terms of being reformed into hydrogen for a fuel cell or for hydrogen production. This leads the way in terms of a gaseous-fuel future, and certainly it's something that we should be considering today for our future.

I've gone through the advantages of NGVs, but of course they are reduced air pollution, net job creation for Ontario—the more NGVs in Ontario, the better it is for job creation—reduced health care costs and increased Ontario GDP by approximately $74 million for every 1,000 NGVs on the street.

The conclusions are continued. The Ontario government has the opportunity to provide leadership in its responsibility to protect the province's air quality, which I believe is very important. We can witness what you are custodian over in terms of water, in terms of air and in terms of land. We believe this is one way in which you can show responsibility and leadership in your protection of the province's air quality in the future. The NGV industry appreciates the province's resolve to retain the incentives necessary to expand the use of natural gas, such as in the PST rebate, but we also encourage you to look at some of the recommendations in this report.

I thank you very much. I know I've probably exceeded my time.

The Chair: You're still OK, but we do not have very much time—about 30 seconds per caucus.

Mr Jerry Ouellette: Thanks very much for your presentation. A quick question: according to the Alberta Energy Board, natural gas production should peak by the year 2003 and then decline 2% per year after that, while the US energy board predicts that by the year 2015 the natural gas demand is going to increase by 45%. How are we going to fulfill those demands now? New pipelines don't expect to be coming on until about 2008 or 2010, and they will only replace the current stocks in place now. How are we going to fulfill that demand?

Mr McNeil: I believe it's quite possible and plausible that we will see huge reserves of natural gas tapped that are unknown at this point. One of the things I found interesting about the study was that they did not have any indication that Ladyfern, for example, in northeastern British Columbia was as huge or as wealthy as it is in terms of natural gas. In terms of natural gas supply, I have seen forecasts which say we are going to run out and I have seen forecasts which say that we have so much we don't know what to do with it and we will have for the next 100 years. Frankly, I don't know who to believe.

What I am trying to do is bring that into perspective and say that in the here and now we have adequate—in fact more than adequate—supplies, we have storage, we have huge reserves and we have offshore reserves we haven't even tapped into yet. I believe that we certainly have a lot more natural gas than we do petroleum products for making gasoline.

The Chair: We'll move on to Mr Parsons.

Mr Parsons: That's fine.

The Chair: Ms Churley?

Ms Churley: Just thank you for your presentation.

The Chair: Thank you. It was much appreciated.

HEALTH CANADA

The Chair: We'll move on to our last presentation for this morning before we adjourn to London, and that's Barry Jessiman from Health Canada, if you don't mind coming forward at this time. Please state your name for Hansard. You have 20 minutes for presentation and questions and answers.

Mr Barry Jessiman: Barry Jessiman, Health Canada. Thank you for inviting me. I hope I can provide some useful information to you. The purpose of my talk is to present the approach Health Canada takes to assessing fuels, including conventional and alternative, and to try to give you a sense of the challenges that exist in getting a grip on the health consequences of making these choices.

Very briefly, Health Canada has been doing risk assessment for air and other types of pollutants for some 40 years. This program was developed about 10 years ago as part of the air health effects division of Health Canada. Overall, the program is designed to provide an assessment for both ongoing issues, today's issues, and to try to anticipate the types of issues we will face given potential new alternatives. It splits its time between those two. We have a host of issues that are very topical, with ongoing impacts, and we have equal emphasis on what we think will be some of the future alternatives. We're hoping to get ahead of the issue rather than playing catch-up, the way we are with some of our conventional fuels today.

As I said, this is part of a larger program to assess the health effects of air pollution within Health Canada. The goals of these assessments, which look at all the scientific literature we can develop or find, is to either make a judgment where we feel there is sufficient information, make a judgment about a particular substance or fuel, or to trigger further investigation, and that is largely to trigger research to fill gaps we've identified in our assessment and which are critical to coming to a reasonable conclusion about a substance.

Just to give you a sense of how we go about this, it's a two-pronged approach to, first, trying to understand the inherent toxicity of a particular compound or fuel. This is the first approach to understanding just how potentially toxic a substance or a fuel is. More important even, though, is understanding the toxicity of the combustion products, because, hopefully, in most modern systems most of the fuel is combusted and we're not really exposed to a lot of it. The major exposure is to the combustion products of the fuel itself.

Now we come to the hard part: estimating exposures. Even for currently used fuels, it's very difficult to estimate the exposures, given the enormous range of situations people find themselves in and the huge variety of activities that people engage in. So this is a very daunting task, and it usually occupies a major part of our assessment process. Because we often don't have the data, and especially for alternative fuels and future fuels we simply don't have any monitoring data, we rely to a great extent on modelling and understanding the interaction of chemicals in the atmosphere and the way in which people are exposed. That has become a major part of our efforts. It is data-rich. It requires an awful lot of either input data or assumptions and, while we make the best attempt to have the best data, we're often feeling about in the dark with that and there are significant uncertainties in this area.

Finally, we combine those two things and try to estimate risks, the essential risk of both the fuel and the combustion products. Where we're comparing alternatives, we can also in the same process estimate benefits. That's the flip side of this coin, that some alternatives present us with some quantifiable benefits. Our goal is to try to lay out both sides of the equation, both the benefits and the risks that we entail in moving to newer or altered fuels.

There are essentially three types of things we deal with in this. The ongoing efforts generally revolve around either additives to fuel or reformulations of fuel. One example of an additive is MMT, a manganese-based fuel additive added to gasoline in Canada to increase octane, which has a very good database, relatively speaking, for a chemical. There are, however, continued public concerns over it and quite an aggressive research campaign on the part of the manufacturer. So there is a host of new data, and certainly it's a fairly high-profile issue based on the letters I get to my minister.

1050

There is another compound, cerium, which is a very new compound. It has a lot of analogies to MMT in that it is, in this case, a substance that is being proposed for addition to diesel fuel which appears—it's only in the testing phase—to dramatically reduce particulate emissions, a very big concern with diesel fuel. However, the toxicological concerns for cerium appear to have been

dismissed with a single test that showed no effects. But it's not a very comprehensive database in the understanding of toxicology, so here we have what look like some great benefits and some unknown risks. We've made mistakes in the past, and this program is to try to at least identify where we should be doing investigations. There is a whole host of other additives being proposed. Technologically, they all appear to have great benefits, but the risks are often understated or unknown.

Reformulations: I've heard MTBE mentioned. It's quite an interesting, apparently simple substance, and I'd like to use my next slide as an example of the type of situation we face with these. It's an addition, a sort of 10% addition to gasoline that raises octane ratings, and at least in the early days it dramatically reduced certain types of air pollution.

Sulphur, on the other hand, is something you want to remove from gasoline. It's a natural component of crude oil, and unless you take specific steps, the sulphur is transferred from the crude into the gasoline. We have new regulations coming on soon to basically bring us down to very low levels of sulphur. Again, it has extremely beneficial aspects in that sulphur is a definite poison for catalytic converters and destroys the ability of catalytic converters to function properly.

Then we get into the alternatives that we are assessing or planning to assess. We've been looking very recently at a growing debate in California between natural gas and so-called green diesel. There are very strong proponents on both sides. This is again one of these where we'll see both benefits and costs associated on the health side. So we need to address these. We need to take it out of the realm where there are proponents involved and try and get a better handle on the health aspects of it.

We've been very extensively looking at the electric vehicle and the potential for it to benefit air quality. We also anticipate looking at fuel cells as more information becomes available. It's currently highly hyped but there's no information on which we can base much work, but we're in anticipation of that.

Finally, while it's not an alternative, the ULEVs, ultra low emission vehicles, are an interesting aspect in that the current vehicle manufacturers aren't really interested in giving up their markets and they've been really working to develop the current engines, the current technology, into an extremely low emission vehicle. That's certainly been pushed in California.

Just very briefly, as an example of the complexity of these issues with MTBE, it's an ether that's one of many ethers that were designed to be added to gasoline to reduce especially carbon monoxide, but also the precursors to ozone and other smog components. It looked very simple. It was a nice, simple process to follow at the refinery and it's been used very effectively for many years.

Unfortunately the flip side, which was not examined early on, is that it's seemingly a not very toxic compound but a very smelly one. It tastes bad and it has an extreme odour at very low levels. As underground storage tanks will tend to do, they leak, and in California especially they have destroyed the drinkability of several underground aquifers on which California is especially dependent. As was mentioned, California is banning this substance because of that. Many other states are trying to follow suit.

It's become a NAFTA issue. The manufacturer of one of the methanol pre-components of MTBE is suing the United States government for $1 billion. A seemingly very innocent little substance has become a bit of a cause célèbre in the whole area. So here's an extremely simple situation that has blown up into quite an enormously complex issue, mostly because it was pushed before there was enough information available to assess all its potential risks. We should have been able to anticipate this problem.

In true alternatives, we divide them into two areas. The first, and to some people the Holy Grail, is zero emission vehicles. They are zero at the tailpipe but not necessarily zero. In some cases, specifically right now for electric vehicles, the electricity comes from somewhere. It's very clear that the potential benefits and the increased risks are to a certain degree dependent on the electricity generation grid that you have. In some areas you can have a very large fleet of electric vehicles without increasing the emissions from your power sources while in other cases that does not appear to be the case.

When we looked at electric vehicles, and what we're looking at now, we initially tried to scope out all the issues we thought should be dealt with. So there were electromagnetic fields. That was certainly the first thing that sprang to my mind: are electric vehicles going to have a big electric field? It turns out that's not true and it would appear that the whole EMF issue is not a concern with electric vehicles. But I thought major parts of the population would consider that an issue, so I wanted enough information out there for everyone to be able to consider, and that will be part of our assessment.

These cars are heavily dependent on battery technology, and the batteries are not infinitely lived, so how do we deal with the recycling of batteries, the manufacture? Additionally, most people have told us that for an electric vehicle to be really viable, it requires a different type of battery using different chemicals than we currently have. The anticipation of those different chemicals being disposed of in use and manufacture needed to be addressed. So we've taken our first stab at that. What would be the battery of the future has not been decided, so there are still some issues there.

Noise, I thought, would be a very important issue from a sociological point of view. I don't like a lot of noise. I love a quiet environment. It turns out that it's the wheels on the road that cause the noise, not the engine. So electric vehicles on a major highway are probably not a lot quieter, except inside. Outside is not a big deal.

Finally we came to our central issue, which was, what's the effect on urban air quality going to be, because in our research program and in our risk assessment program we're really focused on smog and smog-forming

chemicals. Zero emission vehicles are certainly viewed as a major potential for reducing in a dramatic way urban air pollution. This is where we're in the midst of looking at this through both modelling and the monitoring system for air pollution that exists in Canada. It's a very complex issue. We've had to go back. We're on our third round of trying to solve the issues around the unknowns. It's a very complex issue. It is very dependent on the power grid. I think we have about two years to go just to get our first answers that can be spoken of in the light of day because it is a very difficult issue with a lot of uncertainties.

When we come to fuel cells, this is a very future-looking, anticipatory idea. There are a lot of novel chemicals involved. If fuel cells come about there is still no clear decision on which fuel cell, a chemically-based fuel cell or a proton membrane-based fuel cell, will come to the fore. It certainly presents issues around occupational exposure of workers. Much like the battery issue, will there be disposal/change-out issues as the vehicles age? These are issues we're waiting to a certain degree for additional information on and the technology to evolve before we move forward.

The early anticipation was that fuel cells would be run off reformers and use a liquid fuel to derive their hydrogen. There is as yet no information that we can access to find out if there will be emissions from those types of reformers and what they'll look like. So that's anticipatory, one that we see coming up in the next five to seven years.

The other zero emission or low emission alternative—this is more I think what I've heard a lot of the presentations discuss—the one that's certainly a very hot topic right now in the US and has come here very recently based on inquiries we've had, is the issue of green diesel versus compressed natural gas. Heavy-duty trucks can run on both. There are proponents for both. Green diesel is based on a very low sulphur fuel with quite an impressive change to the technology: a lot of add-ons, particle traps, catalytic converters, things that don't exist on the heavy-duty fleet right now. It does dramatically reduce diesel emissions. What it does is bring it down to something in the order of an ultra-low-emission vehicle and CNG. So there's a big debate, powerful forces on both sides.

Again, we're trying to get at what are the essential health issues that need to be addressed, because a big component of all of these things is not what comes out the tailpipe but what forms in the atmosphere afterwards. There's very little tailpipe emission of particulate matter and no tailpipe emission of ozone. It's the precursors to those two substances with which Health Canada is occupied in its risk assessments. The formation afterwards in the atmosphere is at least as important and possibly more important than tailpipe emissions.

1100

The Europeans are very focused on biodiesels as opposed to—well, not as opposed to green diesels. They're pushing forward on both fronts. Biodiesels are very different from diesels in that they're a much more pure compound; they're based on crops and the derivation of a diesel-compatible fuel from them. They have very novel combustion products as opposed to diesel. It's a very different substance, seemingly much cleaner, but some of the substances are very different that come out of the tailpipe. Their contribution to smog formation is quite different and that has to be looked at.

Finally, alcohol-based fuels: we certainly get reduced emissions in these, and they are renewable. The renewable/non-renewable debate is a major component of all of these things, something we don't deal with directly but that we like to raise in our assessments in terms of an issue that needs to be addressed in the wider sense. It does reduce conventional pollutants but, in all the cases we have examined, there are increases in other pollutants and usually in ones that we have not addressed that are not part of the normal assessment process because they are very unusual or simply at very low levels and not a current risk.

So two of the substances that are produced by the combustion of alcohol-based fuels have just been assessed under the Canadian Environmental Protection Act and have been declared toxic. However, the levels from the burning of alcohol-based fuels are not very large, so we have to take a look at what the actual risk to the population would be. It may be minimal. However, it bears looking at.

Finally, we try and provide these in order that a full life cycle assessment can be done. There are others. We work with Natural Resources Canada, the National Research Council and Environment Canada on an ongoing basis to try and get a larger picture, to put these in a larger picture.

Finally, there's no doubt our current transportation system has some pretty significant impacts. I believe I saw an assessment recently that over 50% of our cities is devoted to vehicles. It can't help but have an impact on your city if that's the way your society has evolved.

Replacements have to be assessed in a forward-looking manner. We've been caught in the past. MTBE happens to be a fuel example, but we have examples all over the place in housing and other areas, sort of a single, strong driver pushing us a little too fast and not enough time devoted to some underlying issues that needed to be developed. We also have to recognize, finally, that we have limitations in just how far forward we can see, and that has to be incorporated in any of our assessments.

Thank you very much.

The Chair: Thank you for the presentation. We've just about used all the time, but maybe 30 seconds per caucus just to quickly move around statements or questions. We're starting with the official opposition. Mr Parsons? OK. Ms Churley?

Ms Churley: Lots of questions; no time to ask. Can we find out the results of some of your studies on the Internet? Is there more information we can get on some of these issues?

Mr Jessiman: Yes. Our Web site just came up in the last four months, so it's fairly data-rich and a little difficult to interpret at the moment. It's heavily influenced by the science, but that's going to evolve. But I will—

Ms Churley: Is the Web site address—

Mr Jessiman: It's not in the presentation, but I'll leave you my card.

Ms Churley: Could you? Thank you.

The Chair: And to the government.

Mr O'Toole: Thank you very much. The issue of octane enhancers and their impact on the environment: you briefly touched it with MTBE. How about Canada's position on MMT as part of the octane enhancer group? What's the federal government's position on that? It's actually another product that is quite negative to human health and banned in other jurisdictions.

Mr Jessiman: Unfortunately that's about a 15-day conversation, but we've been heavily involved—

Mr O'Toole: Is the federal government encouraging it or trying to find ways to eliminate it?

Mr Jessiman: I'd say neither. Health Canada did a risk assessment and we're involved in our fifth risk assessment of MMT at the moment. Our fourth one in 1994 found that the exposure in Canadian cities did not exceed the toxicological limit, so we felt there was no added risk. It's not MMT itself but the combustion product manganese that was at issue: neurotoxin at high levels and an essential element at low levels; somewhere in between is the safe limit. What we have found to date, and our findings pretty much stack up with the World Health Organization and the US EPA, is that the level of exposure does not exceed the level of toxicity.

The Chair: I believe, from discussion with your office, your background is toxicology?

Mr Jessiman: Yes.

The Chair: It's interesting, putting it in context with that background. Thank you very much for your presentation.

The committee now will be adjourning to London.

COMMITTEE BUSINESS

Mr Gilchrist: On a point of order, Chair: Given that we have set ourselves a very aggressive time frame and we pretty well filled the days, what I'd like to do is put a motion on the floor that we can consider while we're in transit to London and then perhaps pick up at the end of the day.

Recognizing that we have seen two months pass since the creation of the committee, it's critical that we now move to the research stage. To that end, you will recall that at our first meeting I raised the issue of assigning a specific technology or aspect of the project to each member. In this way, we could multiply the speed at which we fan out to meet researchers, corporations or other potential contributors by a factor of eight and, hopefully, we could finish the data assembly portion of the project before constituency week in November.

Therefore, I move the following:

That the clerk and the Chair, with input from legislative research, ministries and the committee members, create a list of all sites (factories, research facilities, universities, energy sources) worthy of a visit by the committee within Ontario; and

That the list be circulated to the committee members before September 7 with a request for expressions of interest; and

That for research to be performed outside of Ontario, each member of the committee be assigned one or more components and, with the assistance of legislative research, develop a research plan that would ensure that all site visits and interviews were completed by November 10, 2001; and

That the different components to be assigned would be:

Wind, solar, biofuels (biomass, biodiesel, ethanol), landfill gas, waste incineration, waste oil, geothermal (deep mine, deep water, heat pumps), hydroelectric, nuclear, district heating concept, hydrocarbon (shifts within range of petroleum products, use of additives), hydrogen/fuel cells, plus conservation strategies and financial impacts and strategies; and

All members of the committee would be encouraged to participate in all aspects of the draft report production after the research has been compiled; and

The clerk and legislative research shall work with each committee member throughout the period of the research and, at the discretion of any committee member, may, along with the committee Chair, be requested to participate in any site visit, interview or other research.

I'll leave the motion and perhaps we can stand it down until we have had a chance to consider it in transit. Then I would propose that at the end of business today in London, where we have the greatest flexibility, perhaps we could debate the motion.

The Chair: I trust, in discussions with both your colleagues as well as with opposition members, you might consider some friendly amendments here if necessary?

Mr Gilchrist: Absolutely. As I say, I'm proposing the motion here. I expect it to be receiving fulsome debate later today if we get a chance.

The Chair: Thank you very much. Anything further? No.

We have a bus waiting. We will leave when everybody is on the bus or at 11:30, whichever comes first. We won't wait past 11:30. We are now adjourning to the London Convention Centre and we will resume at 2:05 in Salon A of the London Convention Centre.

The committee recessed from 1109 to 1410 and resumed in the London Convention Centre, London.

IAN ROWLANDS

The Chair: We'll call the meeting to order once again. We just left Ottawa and are getting the select committee rolling once again.

Our first presenter is Ian Rowlands. I have 15 minutes for individuals, 20 minutes for groups, so you have 15

minutes for presentation and questions and answers from the various parties. Go ahead, Ian. Sorry that everybody isn't here but they will be.

Dr Ian Rowlands: Thank you, Mr Chair. Mr Chair, committee members, my name is Ian Rowlands. I'm a faculty member at the University of Waterloo, but today I'm speaking in a personal capacity and not on behalf of any organization with which I'm affiliated.

First of all, thank you very much for the opportunity to speak with you today. I'd like to begin by bringing your attention to an astute observation made by a colleague south of the border. A US political philosopher observed that the citizen in him is often in conflict with the consumer in him. Now to my knowledge Mr Sagoff, the political philosopher I'm referring to, is no more schizophrenic than the average North American. He's simply reflecting upon the apparent contradictions in his life. While he wants environmental protection and sustainable development, all too often his purchasing actions do nothing to further these ends. Indeed, he points to the "Ecology Now" bumper sticker on his oil-leaking car as a perfect example of such tensions in his life.

How might Mr Sagoff reconcile these differences? Well, British political theorist John Dryzek has a suggestion. Mr Dryzek, observing Mr Sagoff's car dilemma, says, "The citizen in him would like the government to crack down on the consumer in him." I'd like to argue today that Ontario residents about to participate in an open and competitive electricity market will soon experience similar contradictions in their lives. Although they'd like to improve the environment and advance sustainability, they look set to search for the cheapest product once the marketplace is open. Because conventional and polluting fuels used to generate electricity are usually the cheapest for the purchaser, individuals' actions will serve to degrade the environment.

I believe there exist, however, many opportunities and many ways in which the government of Ontario could help the people of this province ease these internal tensions and increase the use of alternative fuels in the electricity system. Please allow me to develop this argument.

At present there's a high level of concern about the environment in Ontario; numerous surveys suggest that. I have, on the outline I've distributed to you, reference to our own work in Waterloo region, which confirms that as well. I would like to suggest to you that this is the Ontario's public's "Ecology Now" bumper sticker. Like Mr Sagoff, to whom I referred, this citizen in most Ontarians wants a healthy environment, and included within that is an electricity system that makes extensive use of alternative fuels and thus serves to advance sustainability.

I'd now like to turn more directly to some survey results we have from Waterloo region, which are described more fully in the first article I distributed to you. We asked residents of Waterloo region the following question: "Rank how important each of the following factors will be to you when you're able to choose the company that provides your electricity." We then gave them six factors to rank: price of the electricity, customer service, that the electricity is generated locally, environmental impacts, reputation of the company and reliability of the electricity.

Documented in that article are the 384 complete responses we received. The factor that was ranked highest by most respondents was price of the electricity. Almost 40% of respondents ranked it as number 1; another 26% ranked it as number 2. Thus, two out of three said that price will be the most or second-most significant consideration when choosing an electricity provider next year.

What kinds of electricity will be cheapest for the individual? Well, the ones using conventional fuels that are the most polluting. Let me explain why. It's widely accepted that the private costs of generating electricity don't always equal the social costs of doing the same. For the individual consumer at home—Waterloo North Hydro is who I get my electricity bills from—the price on the bill may say something like eight cents or 10 cents per kilowatt hour. That is the price to me as an individual consumer, and that's what I pay. The argument that many have developed is simply that this doesn't capture all of the prices of the power that's being produced. The so-called externalities imposed by some methods of generating electricity, for example, the increased health care costs associated with coal-fired power, aren't captured on consumers' electricity bills. Instead, they're captured on the bills paid by citizens as a whole, perhaps through higher taxes.

In our provincial system, therefore, it appears that the consumers' cheapest electricity sources will be those conventional sources that are most harmful to the citizen. I'd like to suggest that this is the Ontario public's oil-leaking car. Like Mr Sagoff, the consumer in most Ontarians is set to search for the least costly product, which happens to be the most environmentally damaging.

What's all this mean? I'd argue that it means there's a gap between what the Ontario public wants and what the Ontario public is set to do. Ontarians have environmental goals, but their respective purchasing actions in the restructured electricity market won't serve to advance these goals.

Let me conclude by saying something about some of the strategies that are available to try to close the gap between citizen aspirations and consumer actions. The final paper I distributed to you today reviews a number of different strategies in our broader work in Waterloo region on residential energy efficiency and sustainability. Indeed, seven are enumerated with examples given there. The one I'll just pull out for the sake of demonstration is the so-called renewable portfolio standard, or the RPS. An RPS is a requirement that a minimum percentage of each electricity generator's or supplier's resource portfolio comes from renewable energy. For example, if a company wanted to use natural gas in the new marketplace, it would be obliged to facilitate the creation and the use of green electricity sources as well. By using

market forces, an RPS can encourage greater development of alternative fuels.

The thing that strikes me as interesting about an RPS is that it's being used in many jurisdictions around the world, and it seems to cross over whatever ideological divides there might be, as states as politically and culturally diverse as Massachusetts and Texas have both adopted an RPS as part of their sustainable energy strategy.

My emphasis again upon it is not to suggest it's the be-all and end-all but simply to flag it as one representative strategy among many that has the potential to increase the use of alternative fuels in our electricity supply mix and to move us toward sustainability.

In summary, members of the committee, Mr Chair, I've identified the gap between citizens' desires and potential consumer action with respect to the upcoming opening of Ontario's restructured electricity system. I've also highlighted some strategies that exist for closing that gap. Without any action, I think Mr Sagoff's Ontario cousin will undoubtedly choose to drive the proverbial oil-leaking car in the new electricity marketplace, if you are able to stick with my imagery on that. We have, however, an opportunity to take action so he won't feel financially obliged to do so, and with a bit of help, he can be truer to his "Ecology Now" bumper sticker aspirations.

My understanding is that this committee is in a good position to try to catalyze and stimulate debate about various strategies to encourage increased use of alternative fuels in a more sustainable electricity system; I encourage the members of the committee to do so. On the cover sheet, my contact details are listed at the bottom. I'd be happy to try to answer any questions at this point or at a later date. Again, thank you for the opportunity to speak with you today.

The Chair: Thank you for a rather interesting presentation as you comment about citizen desire versus consumer selection. I think you put that in an interesting sort of nutshell for us. Thank you. We have about two minutes per caucus for questions or comments.

Mr Jerry Ouellette: You mentioned the survey you did. What percentage response did you receive on that?

Dr Rowlands: The survey response rate was of the order of 43%.

Mr Jerry Ouellette: How did you determine your sample selection?

Dr Rowlands: It's a biased sample selection, and the description of the bias is in the associated paper. If I may just make one follow-up comment.

Mr Jerry Ouellette: Sure.

Dr Rowlands: People who replied to the survey are involved in our home energy efficient program in Waterloo region, so generally they're a wealthier, more educated and slightly older population.

1420

Mr Jerry Ouellette: Have you looked in any other sectors at all?

Dr Rowlands: We'd like to. In the continuing research, we're going to take a sample from the dreaded Waterloo region phone book and see how those results compare with this sample.

Mrs Bountrogianni: You mentioned in your survey paper that Texas has introduced protected markets for renewable energy. Can you just talk a little bit more about that, about the Texas model?

Dr Rowlands: Certainly. I don't know the exact details. The organization that has categorized a lot of these is based out of North Carolina with the initial DSIRE. Basically it has of the order of 2% to 3% protected market for renewable energy, and different states are taking different tacks on it. Some are suggesting that they should be playing to the particular comparative advantage within their region. Nevada, for example, is looking at solar in particular. Others are ratcheting it up slowly over a period of years. That's what Massachusetts is doing as well. Texas has a lot of interesting work going on in wind power in particular down there.

Mr Parsons: In some ways I'd like to sit down and talk to you for a couple of hours, rather than 20 minutes. In terms of electric consumption in Ontario, if I'm remembering the numbers right, the residential houses are relatively small players. It's about 100 large industries that are the consumers of electricity. With the concern you've expressed that it be environmentally sound electricity, have you any sense, have you had any talks with industry that would indicate that they have the same concerns or attitudes?

Dr Rowlands: Personally, we've had some support and interest on the part of industry in Waterloo region on our activities; I'm not saying in premium-priced green electricity explicitly. I can refer to the broader North American examples where premium-priced green electricity has been available and there have been instances when companies have chosen to pursue that route. In my own community, Cambridge is the only place that is able to offer green power right now, and Toyota was one of its customers for the premium-priced green power.

The Chair: Ms Churley, did you want to—

Ms Churley: I just wanted to apologize for missing your presentation.

Dr Rowlands: That's fine. There are documents available. If there are questions, feel free to get in touch.

The Chair: Thank you very much for your presentation. We appreciate your coming forward. It's interesting how you've packaged that.

Dr Rowlands: Thank you. I wish you luck in your deliberations.

ONTARIO CORN PRODUCERS' ASSOCIATION

The Chair: Our next presentation is from the Ontario Corn Producers' Association. The names I have are Doug Eadie, David Start and Terry Boland. Two of you are here. Maybe you could state your names for the sake of Hansard as you start. As an association, you have 20 minutes. Anything that's not used up in your presentation

will be divided among the three caucuses for questions and comments.

Mr Doug Eadie: Good afternoon. We appreciate this chance to make this presentation on behalf of the Ontario Corn Producers. My name is Doug Eadie. I chair the market development committee with the Ontario Corn Producers and am actually a corn producer from southern Bruce county.

On behalf of Ontario's 21,000 commercial grain producers, I'd like to thank you for this opportunity to meet with you today to discuss the enormous task before you as the Ontario Legislature's select committee on alternative fuel sources. In particular, may I welcome you to Middlesex, one of Ontario's largest corn producing counties.

Not far away from this convention centre corn is being grown that will find its way into your gas tank, if you buy ethanol-blended fuel, and for us, that is the bottom line. Producing an environmentally beneficial fuel for Ontario's travelling public benefits not only the environment in so many ways but also creates jobs and economic activity in smaller urban centres and our rural communities.

The Ontario Corn Producers' Association has been a major proponent for the development of an ethanol industry in Ontario. It has taken us almost 15 years to have ethanol produced and sold in this province. Along with our partners in the industry and with the strong efforts of the Canadian Renewable Fuels Association, we have been able to offer consumers a renewable, environmentally beneficial alternative to the status quo.

Today you can get ethanol blended fuels in most locations across the province at prices comparable to gasoline. Those are the two most important factors in consumer purchases of fuel: price and availability. But with ethanol in a 10% blend, you get the added benefits of: reducing smog, smog, smog—you'll notice it's down there three times, because that's how important that is; I'm sure all of you drive in and out of Toronto many times, and especially in a summer like this you experience it—30% lower carbon monoxide emissions; a net reduction of 6% to 10% in carbon dioxide emissions; lower particulates; replacing the octane loss created by lower sulphur content in gasoline; reducing greenhouse gases; twice the energy value in the product as it takes to produce it; meeting RVP standards through tailored blending—RVP is a vapour pressure standard—replacing other aromatics in gasoline deemed harmful to consumers; being an oxygenate, allowing for a more complete burn of the fuel; providing octane for high-performance fuels; extending our dwindling crude oil reserves; and avoiding dangerous high-seas tanker transport.

For those of you not familiar with ethanol, please do not confuse it with methanol. That's a common error. Many people, I'm sure most of you here, are familiar with what ethanol is. It is a biomass-based renewable fuel that is added to gasoline in a 5% to 10% blend. Methanol, on the other hand, is a derivative of natural gas.

Ethanol is an alcohol made from renewable resources—I stress the word "renewable"—like corn and wheat. Grains are processed with enzymes and the mash is distilled to produce a high-quality alcohol. In addition to being a high-quality, environmentally beneficial and renewable fuel, ethanol also has the added benefit of being a natural gas line antifreeze.

In North America, ethanol is primarily made from grain corn, but with the growing demand in the United States, and also Canada, for that matter, for ethanol, due primarily to the removal of MTBE from gasoline, other biomass feedstocks are being widely considered.

You probably heard a presentation from Iogen if you were in Ottawa today. They, of course, are talking of using wheat straw. I know they did work with corn stover and also soybean straw. You probably heard a presentation on that from a non-grain-producing feedstock.

I'd like to take a minute now to dispel some of the myths surrounding corn production for ethanol. Will it increase pesticide use? No. Ontario farmers have reduced pesticide use by 42% in the last 15 years and adopted best pest management and crop rotation practices. Will it result in more energy use on the farm? No. Ontario farmers have adopted and continue to adopt low- and no-till farming, requiring substantially less energy use. Will it harm the land? No. Ontario farmers, through no-till, have allowed substantial crop residue to remain in the field to build soil organic matter. Pesticides and energy are costly inputs, and in this day and age of farming, reductions in the cost of farming are mandatory.

The Canadian government has already indicated, as part of its greenhouse gas reduction policy, that it wants to increase the use of ethanol blends in Canada to 25% of the national fleet. That means producing one billion litres of ethanol per year. Today Canada produces 234 million litres per year, mostly in Chatham and Tiverton, Ontario. Another production facility is close to construction in Cornwall, Ontario.

Ontario is well placed to fill the 766-million-litre gap, with substantial benefits in job creation, spinoff employment, on-farm activity and rural economic development. In Ontario today, ethanol utilizes 17.5 million bushels of corn, worth almost $57 million to farmers each year in direct sales and an increase in the basis for Ontario corn. It creates jobs in plant operations and local economic spinoff activity. It helps to diversify and secure economic wealth for our smaller towns and cities, and rural communities.

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We would like to thank the Ontario government, and over the past 10 years this includes all parties, for financially supporting the development of ethanol production facilities and providing incentives to allow renewable energy into a marketplace at a competitive price set by others. Still, it has been a rough road, taking over nine years to bring the ethanol plant in Cornwall, for instance, to the point where construction should soon begin. If we plan on seeing the necessary change in our lifetimes

envisioned by this committee, we will need to make those changes happen, not just hope they will.

As you are aware, or will be after the submissions from participants in these hearings, the introduction of any new fuel will have a cost. It is a matter of volume of product, widespread availability of appropriate vehicles, pricing, availability and consumer acceptance. Ethanol has made great strides in these areas. I might add, up to a 10% blend there is no change needed in any cars or trucks manufactured for the world market today.

But government has a significant role in the last point, consumer acceptance and use. No matter how hard we try and explain the benefits of renewable fuels and dispel the myths created by others, consumers are always leery of veering off the status quo. This is a barrier to all new fuels or power options. You are trying to change the buying habits of millions of drivers on equipment purchases and fuel options.

In 1998, the Ontario Legislature considered Bill 34 proposed by Jack Carroll, an amendment to the Environmental Protection Act, that would have required 2.7% oxygen content in gasoline in Ontario. Unfortunately, the private member's bill only made it through the committee stage, without amendment, before the Legislature's session was prorogued.

Government must not only take a leadership role, but do it forcefully. Past governments have promised provincial procurement policies for ethanol-blended fuels but they never materialized. They promised assistance in consumer awareness, even announced a program, but it never actually materialized. This committee has the opportunity to send a clear message and set a new standard in addressing air quality issues.

Ethanol can play and is playing a role in improving air quality. We are slowly seeing more and more fuel distributors, including some major oil companies, embrace ethanol for fuels for both its octane value and environmental benefits. Yes, you can clear the air and have economic benefits at the same time.

We must express our thanks to companies such as UPI Inc, who, as pioneers, have taken the bull by the horns and challenged the status quo with new environmentally beneficial products, such as ethanol-blended fuels. Last week, UPI opened their first enviro-station at Woodstock, placing fuel storage tanks and piping for fuel aboveground, reducing the potential for leakage into the water table and providing for easy site remediation. The double-walled tanks, armed with sensors, alert operators to any problem, allowing for easy tank replacement. Our congratulations for the innovation on behalf of the environment.

Once again, on behalf of Ontario's corn producers, I would like to thank you for meeting with us today and allowing us to discuss the renewable option for transportation energy, fuel ethanol. We wish you the best of luck as you venture into the maze of energy options, and through your wisdom may we all have cleaner air and a cleaner environment for our children and grandchildren.

Thank you, Mr Chair and members of the committee, for this opportunity.

The Chair: Thank you very much for the presentation. We have hardly three minutes per caucus, so we'll start with Ms Churley.

Ms Churley: Thank you very much for your presentation. You're right; we did hear presentations on this this morning in Ottawa as well. Certainly, as you said, our government—I'm with the NDP, as you know—helped kick-start this industry, and the present government has continued with some policy. I guess now the question is, and you mention it, what do we have to do? What's the single most important thing this committee can recommend to the government to do to increase the usage of ethanol by consumers?

Mr Eadie: I suppose one of the top priorities, of course, is the awareness issue and helping spread the news, the information that there will be an environmental impact.

Another area that goes hand in hand with that is that the financing of these plants is a huge undertaking. We're probably at a point in Ontario much like the state of Minnesota in the US was a while ago. They had a great desire and need for more plants. They actually legislated mandatory ethanol blends in Minnesota. There the state helps support what they call new-age cooperatives in the construction of plants which are farmer-owned. They require no subsidies if you look at it from a point of direct subsidies. So there are some financing options.

Terry, you might want to add any others that come to your mind.

Mr Terry Boland: One thing we talked about in the brief was procurement policy. I think this shows leadership on behalf of government by buying ethanol-blended fuels as part of their policy within different ministries, by using E85 cars, which shows the public that you accept the viability of the fuel, the viability of the vehicles, and show some leadership in taking that one step further and suggesting that they buy these vehicles or they use these fuels.

If you cannot convince the public that it's available, that it's acceptable and that it's priced within their range, then I don't think any fuel here is going to have a chance at all of making it into the marketplace, because you're going up against a huge oil industry. Let's face it, they have a lot of clout. They go for lunch and I could use that budget for the entire year for public relations. That's about where we're at. We're talking big dollars here and we can't compete against them.

Ms Churley: That's helpful. Thanks.

Mr Hastings: Do you see only, then, a subsidy-based approach to getting this done, either through mandates or through mandatory requirements and purchasing by municipalities; in other words, that you have to make it a law to do it and it won't work through a market-oriented approach in and of itself?

Mr Boland: If you look at the United States where they put in the Clean Air Act, there are certain areas of the country where high pollution takes place, high carbon

monoxide emissions, and they are required through mandate and from the Environmental Protection Agency to put so much oxygen content in gasoline to try and abate that carbon monoxide problem. So, yes, in some cases there will be requirements to legislate in high areas. Maybe Toronto is one of them, or Vancouver or other cities in Canada.

We've never been favourable. We like to see the marketplace do it, but when you're up against companies that see you as displacing their refining capacity, they're not willing to give it up. So we have a tough time getting into the marketplace.

Mr Hastings: What do you think has changed, if anything, in terms of the attitude of the Canadian Petroleum Products Institute, the Ontario branch?

Mr Boland: I don't think they've changed at all. The companies may have changed individually—

Mr Hastings: Yes, I think that's true. Some have.

Mr Eadie: Actually, if you look at the Kyoto agreement on greenhouse gas emissions, if it was going through as it was laid out and had the backing of the United States to the extent it should have, then I would say within a matter of a very few years, you would see the major oil companies lining up to be part of this industry. Petro-Canada, for instance, is an investor in Iogen. So behind the scenes they are laying the groundwork for it but at this point it's still—

Mr Hastings: Do you think that's a cultural thing in terms of having this stuff not totally mainstream yet in terms of business schools and business programs at community colleges? It's not brain-centred in terms of—you know, the government in whatever form has to be the driver to get the public to look at the values of some of these off-stream things—not off stream to us but off stream in the broader acceptance. You've got to get it into the science and technology and the business admin schools. Do you see that as part of this, not just consumer buying awareness?

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Mr Boland: Yes, I think you're right there. I think the government's role in awareness can't be underestimated, the impact it has, because it takes leadership. It's really a win-win situation, especially in the eastern Canada where we're net importers of light crude oil. Ethanol directly displaces those imports.

Mr Eadie: I think another—

The Chair: We're really going to have to move over to the official opposition.

Mr Steve Peters (Elgin-Middlesex-London): How many bushels of corn were produced in Ontario last year?

Mr Eadie: With grain corn, we usually hang in around 200 million bushels. Last year it was over that, this year it'll be a bit under that, but that's the ballpark.

Mr Boland: We just actually downsized the crop today. We went down to about 200 million bushels from what was projected to be a record crop of 240 million.

Mr Peters: In your brief you said 17.5 million bushels of corn are used to produce 234 million litres. Of that 17.5 million bushels being used right now, how much Ontario corn is being used in Chatham, Tiverton and Cornwall?

Mr Eadie: I would say this year it probably would be a strong two thirds.

Mr Peters: Two thirds of that—

Mr Eadie: Just to add a little more to that, there is Ontario corn that's exported because of transportation rates into the northeastern United States, so you always tend to get some Michigan corn flowing across, into the Chatham plant especially, because of transportation issues. At the same time, in an average year we have Ontario corn that moves into the northeastern US feed industries. So you're always going to have some imports, depending on the geographical location of any large user of corn.

Mr Boland: In the case of the Chatham plant, about 5% of the corn that goes into it is contracted locally right around the plant, so there is a direct benefit to producers around the plant.

I should also make a correction. You mentioned 17.5 million bushels for 234 million litres, and that's not quite correct. The 234 million litres is national, because we also produce it from wheat in western Canada and some barley. There is also some wood waste based out at Timiskaming; Tembec is actually the producer of that. So there is some ethanol being produced by others than Commercial Alcohols.

The Chair: Very quickly, about 30 seconds.

Mr Parsons: To achieve the one billion litres, what would the effect be on corn that would have otherwise been destined for cattle? What effect would it have on cattle farms?

Mr Eadie: On cattle prices?

Mr Parsons: On cattle corn. If you're consuming this much corn, are you going to eat into the feedstock?

Mr Eadie: No. When you produce ethanol, number one, one of the main by-products of course with corn is the seller's grain, which is in itself a very high value feed to the livestock industry. With the supply of grains, if you take Canada as a whole and the price of it, if we moved up to the billion litres you wouldn't miss it at all as far as the livestock industry goes.

Mr Boland: That's a national figure by the year 2005.

The Chair: Thank you very much for coming forward. It was certainly a very interesting presentation. We look forward to the evolution of this particular commodity.

AGRICULTURE TECHNOLOGY INC

The Chair: Our next presentation is from Agriculture Technology Inc, Steve Posthumus, president. I hope I pronounced that OK. If I didn't, please correct the record. State your name as you start the presentation and you have 20 minutes to be shared between presentation, responses and comments, and questions from the three parties.

Mr Steve Posthumus: Thank you, Mr Chair, and yes, you did pronounce it right.

We're a private company working in the Windsor-Leamington area, agriculture based, but I felt it necessary to come down here and share with you the sorts of things that we are doing and the sorts of things that are going to be involved in the agricultural industry.

We were approached three, four years ago by the greenhouse growers' association to help solve a problem within the greenhouses to remove the old crop when it's done. Within the greenhouse operation, most of the hydroponically grown—a tomato plant will grow up to 40 feet long, pepper plants 12 to 15 feet long. The labour situation was such that it was just a horrendous job, so we went in and developed some machinery to mechanically remove this old crop when the crop was finished. The first year we accomplished 36 acres, the second year 136, last year 250 and this year we'll top 500. We built a recycling plant; in other words, we are now in a position to grind up and separate the organic from the inorganic within the crop. This has been a major issue. A lot of farmers have felt that the tipping fees at the landfills were too dear; they either historically burned or buried the product.

Over the last year we have been researching quite extensively what we could do with this product. We can, of course, put it back on to the ground for wheat, soy, corn growers etc. But we felt perhaps there was a better option that would be environmentally sound and give the greenhouse growers' association a better perception of what's going on. We have found out that the material, the tomato and pepper vines, has about 7,500 BTUs per pound when dried. I have a sample here—not knowing exactly how this committee functioned. We found that, with that, we could in turn use this product to heat the next crop. Mind you, we need more than what is produced, so it would be blended with a wood chip. We can blend it with corn, we can blend it with corn stover, we can blend it with straw, whatever is out there that the agricultural community produces. It can actually be blended and used in a particular furnace.

I just happened to centre out one, a Talbott, made in England, which is now produced in the US. We feel it's the best one on the market. It actually can produce steam for cogeneration and, after the steam, hot water for heating the greenhouses. We also can take the CO_2 off the exhaust stack to put back into the greenhouses. So in actual fact, the greenhouse operation then becomes a zero producer of CO_2 from the stack, because the crop in itself will use it again, unlike a fossil fuel.

I'm here today to encourage this committee to assist the agricultural sector in this. I don't think we're asking for handouts, but I think there have to be some tax incentives. Right now, with the one incentive that's out there, the renewable energy development initiative, there's 25% on the capital cost up to $80,000. That would mean about a $320,000 expenditure for the greenhouses. Most of them, using a biomass fuel, will invest a minimum of $800,000, and that's on a five-acre basis. The majority of the greenhouses going up are substantially bigger than that. The other, under the tax incentive, is section 43.1 of the Income Tax Act, which allows 30% declining balance write-off. The unfortunate thing is that is for industrial use, and the agricultural industry and greenhouse industry haven't been defined in that yet. So I would encourage the committee to look into that to see if we could get the agricultural sector to go underneath that to get some incentive for the growers. The agricultural sector is having a tough enough time already, especially now with the tariffs and everything that we're dealing with with the US.

Gentlemen, ladies, I represent myself. I'm not representing the industry, although we're quite heavily involved in it. This year we will divert somewhere in the neighbourhood of 60 million pounds from landfill. We also recycle all growth media in which the crop is grown and we separate growth media from plastics. The plastics, in turn, are going to be used for another private industry to make consumer products, construction. So we're trying to help the industry as much as possible, and I just wish to encourage you to do what you can to offer any assistance, especially on a tax basis. I don't think that the growers want a financial handout; I don't think that's what it's about. But we have to put a carrot out there to make sure this sort of thing happens, because the technology is there and private industry will do this. We're just a small company down in our area, but this can be duplicated anywhere.

By all means, if you have any questions I'd be more than pleased to answer them.

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The Chair: Thank you very much for the presentation. We have about three to four minutes per caucus, starting with the official opposition.

Mr Peters: You've talked about tomato, pepper, cucumber vines. What else is out there that potentially could be used as a source?

Mr Posthumus: We could use any of the municipal wood waste. We can divert pallets, tree trimmings or whole trees. All this can be ground up and blended. We would use probably 10% vine and then blend it with sawdust from manufacturing, any wood chip, any bark, anything of that nature. As well, we could blend it with corn stover, wheat straw, anything from the agricultural community, even poultry waste, dried down.

Mr Peters: In your facility here, with the energy that you produce, can you say you could do this many hundreds of thousands of square feet of greenhouses? Can you put a figure on it and say, OK, one of these facilities can do this much or produce this much energy?

Mr Posthumus: In our area we have approximately 1,000 acres. That uses roughly 10,000 gigajoules per acre per year in fuel costs. At $6 to $7 for gas, that's between $60,000 and $70,000 per acre. We can produce the fuel at approximately $2.50 to $3 a gigajoule; in other words, reducing the fuel costs by about half. The return on investment for most growers is going to be under four years. The volume taken out of the greenhouses, the 1,000 acres: we could probably do a 25-acre greenhouse just on vines. That's it. If there was nothing else, we

could heat 25 acres just from that. We're saying there's an opportunity there to blend this product and to offer growers a much less expensive fuel source, as well as being totally environmentally friendly.

Ms Churley: So this involves a plant? I'm just looking at your—is this—

Mr Posthumus: No, ma'am. That is just—

Ms Churley: Can you explain the diagram?

Mr Posthumus: That diagram is just a picture of a plant in the US. That is a cogeneration plant.

Ms Churley: And that's where you hope to get to?

Mr Posthumus: We hope that each individual greenhouse will have the ability to set up a cogeneration plant. In other words, for the larger ones, let's say the over-25-acre ones, they could produce their own steam for their own electricity, and they would have enough heat to heat the greenhouse as well as the CO_2 that's required for the crop to grow.

Ms Churley: It says here under "Products" in this particular slide, "Ash can be used as fertilizer." What would the process be that would produce ash?

Mr Posthumus: The ash that is left over after the combustion cycle can be used as a fertilizer to put back on the ground. It wouldn't be used in the greenhouse per se. We also have had inquiries from people in Texas to use the ash as an absorbent in oil spills and other chemical spills because it absorbs liquid products quite extensively.

Ms Churley: Because this is new to me, are there any downsides to this, in terms of the environmental impact, with the process itself?

Mr Posthumus: I guess there's a downside to everything. It's a little bit more labour-intensive. It now exceeds the environmental standards in Ontario by 50%, the burning, because it burns so clean. It's 98% efficient, this particular burning. This is not an incinerator.

Ms Churley: That's what I'm trying to clarify here.

Mr Posthumus: We're not burning garbage. We're burning carbon-based fuels such as wood, wood chips, anything that can be grown. So that's why I say it's a zero producer of CO_2, because it is in turn used again within the greenhouse.

Ms Churley: So in the burning process itself, would that, under such high heat, produce natural dioxins because of the high energy involved? Sometimes the actual high burning will create dioxins.

Mr Posthumus: That's a question I cannot answer. I don't know, and I'm not even going to try to answer that, OK? I know that it burns 98% efficient. It burns the peppers or the cucumbers, and I don't know if there are any dioxins in peppers or cucumbers.

Ms Churley: Probably not. You're not burning anything else with these products, right?

Mr Posthumus: No. It's just carbon-based products, ma'am.

Ms Churley: That's all it is. OK. Thank you.

The Chair: Thanks very much. We'll now turn to the government side.

Mr Hastings: Steve, when you talk about tax treatment, we saw in Ottawa this morning from Natural Resources Canada the Canadian renewable and conservation expenses, which is a tax credit, or really a flow-through share arrangement very similar to what is used in the fossil fuel exploration and development. Is this the kind of specific structure you're looking for in terms of getting this stuff going in your particular industry to help greenhouse growers? You can produce a pile of food from this as well as the other benefits to the environment.

Mr Posthumus: Because I'm not an accountant and I don't know the particulars of that program—

Mr Hastings: It's about 80% to 90% under the Canadian resource exploration expense; 90% of a dollar that anybody puts in.

Mr Posthumus: See, that would be tremendous. What an incentive to get into this. It affords what the agricultural sector feel is a safety valve. They can set this up. It's usable. But let's say natural gas falls back down to $3 or less a gigajoule, which I don't think will happen. They'd still have the ability to use gas. It isn't like we're trying to put any particular sector out of commission, but we feel that growers need a helping hand here. Because of the amount of money that's spent—up to $60,000 an acre, and there are 1,000 acres there—they can save 50% or better just on this type of system, whether we do it or somebody else.

Mr Hastings: So you not only need this kind of tax treatment approach, but you need to have agricultural or food processing considered as an industrial application if they're going to define it very carefully.

Mr Posthumus: I think in this aspect, yes, for the construction of these particular units, the furnaces and the boilers. It would be nice to see not necessarily that they are classified as industrial, but perhaps that agriculture could be associated with that, that it be broadened to agriculture. I don't know if we want to turn around and call that part of the industry, the greenhouse industry, industrial, because that could open up a whole can of worms.

Mr Hastings: "Commercial," probably.

Mr Posthumus: That would be great.

Mr Hastings: Have you designed this recycling facility you're talking about?

Mr Posthumus: Yes, sir, I have.

Mr Hastings: What kind of experience did you have in dealing with the local hydros or with OPG or any of the other new entities out there in terms of the cogeneration here? Are there technical issues that we need to be looking at?

Mr Posthumus: I don't think so much technical. That end of it is pretty well done. When I say "cogeneration," I'm talking about more for grower to grower, not necessarily for the grower to put back into the grid. I don't know if that's even allowed in Ontario yet, that we can sell back to, as a small entity—I mean, these are small in comparison to—

Mr Hastings: That's a big issue in terms of some of the other alternative fuel suppliers such as solar and

wind. How do you deal with the standards in your building code and also with the connects, and what kind of educational stuff needs to be undertaken, and work out the economic side of the credits if you did go with that arrangement? I'm just wondering if that's something you need to look at.

Mr Posthumus: I suspect it is. I don't have any answers to that. I do know there'll probably be the stationary engineer within the facility to run the cogen. But as far as what else you talked about there, I can't answer that.

The Chair: Thanks very much for the presentation. Just a comment. In the energy crisis back in the 1970s, I heard a comment made by a speaker at that time that it didn't matter what you burned—whether it was oak or pine or straw—if dried to the point for burning, you received the same BTUs per pound. Of course it's a lot more convenient to handle the oak or the heavier wood, a lot less volume. I just thought it was an interesting comment. How credible that is—it was almost 30 years ago—but it kind of stuck with me.

Mr Posthumus: I think it's the same thing now, sir.

The Chair: Thanks very much for your presentation.

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EARTH ENERGY UTILITY CORP

The Chair: Our next one is David Medhurst from Earth Energy Utility Corp, the CEO.

Mr Roy Unny: Actually, I'm not David Medhurst; I am Roy Unny, here on behalf of David Medhurst. I work for David Medhurst.

The Chair: Thank you very much. I was just going by what was written here.

Mr Unny: As usual, people make mistakes and the presentation I'm going to give you is slightly different from the one in your notes. I just realized I forgot to copy the one from our LAN on to here. If there are a few differences, the one that you have is the proper one.

Thank you very much, Chair and committee members, for allowing me to make this presentation. As I said, my name is Roy Unny. I work for Earth Energy Utility Corp. I am the director of project management and I work for David Medhurst, our CEO. It's our pleasure to be able to make this presentation to you.

I will give you a presentation to explain who Earth Energy is, what geoexchange technology is, and at the end I have a few recommendations that I would like the committee to consider. I have prepared a brochure, with our corporate brochure and a number of case studies for your use, as well as a copy of the presentation. I would be happy to answer any questions that you have. I hope I'll be able to answer them.

I always like this slide; I love the picture: "Heating and Cooling the Way Nature Intended."

Who are we? We are the world's first geoexchange utility. Later, in a few slides, you will understand exactly what geoexchange is. Our core market is large-scale residential, institutional and commercial buildings to use ground source heat pump technology. We are dedicated to sustainable energy innovation and we are focused North America-wide as our target market.

Our mission statement is quite simple. It's bold but it's what we want to do. We want "to be the world's largest geoexchange utility company." We are also the first one. The first out of the block gets to lead, and our goal is to be the world's largest. After North America, there's Europe and many other continents available for us.

Our corporate structure: we are a multinational technology corporation and we are structured on a utility model. We own the plants that are put in. Our major shareholders are New Energies Invest, a Swiss holding company, and its shareholders basically are very large Swiss banks: Bank Sarasin and Swiss Re. They have put up the start-up capital for our company. We have been in operation about eight months. Obviously we've got some strong financial backing behind us. They've given us initial capitalization of $32 million and it will grow to $100 million next year. We definitely are in this market here to make money, but at the same time we feel we can make money while providing a sustainable energy solution.

New Energies Invest's mission is to be Europe's leading sustainable energy technology conglomerate. Their goal is to invest in various sustainable energy technologies: geoexchange, photovoltaic and wind. They've invested in two companies in California. However, we are the sole geoexchange unit and we are based in Burlington, Ontario.

This slide has got too much detail in it but your slide basically has a little less. Our company was formed eight months ago and we started by developing it with a core group of senior advisors and directors. Two of the key advisors with whom I'm sure you're quite familiar are Simon Reisman—he is chairman of our board—and John Rae, who is the executive vice-president of Power Corp. Other board members include Lord David Currie, senior economic advisor to Prime Minister Tony Blair; Kevin Brown—their names are all in there—and a number of the Swiss bankers; Dr Juan Rada, who is a senior vice-president of Oracle Software. So we've developed a very strong board to advise us as we go ahead.

Our key management: there is a lot of detail here; you don't need to see it. Basically most important is David Medhurst, who is our CEO. He has 23 years of international experience. He ran a consulting company in Toronto for many years, the condo market. He was instrumental in developing reserve fund studies etc. I'll skip the rest of this. This shouldn't have been here, details about us. That's more of a sales thing.

Let's get to the important part. I'm not sure if any of you have had a presentation yet about geoexchange.

Interjection.

Mr Unny: My pleasure to be the first.

How does geoexchange work? Some of the Web sites have these funky little diagrams, and maybe I should have put one in here, but that's all right. The earth absorbs 47% of the sun's energy. It's free energy and this

is 500 times more than mankind needs every year. What it does is produce a constant underground temperature. Basically your first 1,000 feet of crust, for lack of a better word, are maintained at a constant temperature because of the sun.

What geoexchange heat pumps do is take this energy during the heating season at an efficiency of 400% and they take the energy in the cooling season. What happens is they extract the heat from underground using pipe loops—these are closed loop systems—or you can actually take it from ponds and rivers. In the summertime you actually send heat down into the earth. The result is that what you extract is always at a constant temperature and it's that constant temperature that you use to run your system.

Basically, conventional HVAC distribution systems deliver conditioned air to the zones. In a nutshell, we provide heating and air conditioning using free energy from the sun. That's probably the simplest explanation. It has been in use for over 40 years. This is not a new technology.

It's renewable and highly eco-friendly. Whatever is extracted in the winter is essentially renewed in the summer. All you're doing is transferring heat from the ground and into your building, back and forth.

According to an EPA study—and it's in our brochure—it is the most energy- and cost-efficient space conditioning technology and it has the lowest operating and maintenance costs.

There are over 800,000 installations worldwide. I'll focus on Canada: 30,000. Most of those are in the residential home market. There is a niche market there. That is not a market that Earth Energy is focusing on. We prefer large-scale commercial or institutional buildings where your heating and air conditioning loads can be very large, several hundred tonnes. When you think of all the greenhouse gases which must be used to maintain a building such as this at a comfortable temperature, you can see that that's an underserviced market from our point of view. That's our core market.

There have been many sample projects across North America, up to one million square feet etc.

What are the benefits of geoexchange? Renewable energy. There are no pollution side effects. Cost savings—capital and operating—from an Earth Energy point of view. It's proven. It's got low maintenance costs. Extended equipment life.

You can have zone controls so each individual room in a condo would have its own heat pump and they don't have to fight with each other. If you're in, let's say, a multi-residential building, the south side could be cooling their units at the same time the north side is heating their units. That would be an example. I remember the last time we lived in an apartment and it was "Me first." Whenever the heat got turned off, if you were on the south side, or whatever, if you were on the north side it would be cold for about a month.

Safety: there are no carbon monoxide issues; very good indoor quality; no ancillary construction costs; improves space planning; and low noise.

Why geoexchange now? Why has Earth Energy been created? Well, for a number of reasons, and I'll just bring them all up here.

The Kyoto Protocol on greenhouse gases: we essentially reduce greenhouse gas emissions. Energy price increases: natural gas has had almost a 300% increase in the last few years. We say it's socially and corporately responsible. Superior HVAC technology. When we market this to corporations, building owners, developers etc, we say that it gives you an enhanced market position. Tenants will want to come to be in your building.

It frees up scarce resources for better uses. Why should electricity be used for heating and air conditioning when—if you remember about a month ago when Ontario Hydro, or OPG, whatever, had its largest demand, they were probably asking many factories to shut down so that load could be used essentially for air conditioning. We would free up those resources.

And we come to the rescue. This is a slide I picked off the Geoexchange Web site. Essentially, putting it in your house is equal to taking two cars off the road. That's a little chart that I saw, but they have lots of similar examples. For example, it's also equivalent to an acre of trees if you were to put it into your house. So, if you can, imagine us going into a multi-residential apartment building, the immediate impact we have.

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What are barriers in North America? High initial capital costs, lack of infrastructure, lack of knowledge by HVAC industry and design professionals, and lack of awareness by the public.

What is Earth Energy's response to these barriers? We offer a utility service. We design, install, own and manage the complete system, so if you are building a brand new multi-residential apartment building, we will take complete ownership of your entire HVAC system and we will install your loop field outside for you. That is our job. Under a utility service agreement, you basically sign a utility agreement with us and essentially we get paid over the life term of the utility agreement. We assume the technology risk. We finance it to eliminate the capital cost barrier. We recognize that because you do a lot of work outside—you're drilling a closed loop system outside of the building—there's an associated capital cost, but we take responsibility for that. We support the service infrastructure, and we've built contacts nationally and internationally.

What's our mandate? To encourage development of capabilities in the industry—engineers and architects—to support our interests and industry growth: we want other companies to come out there and put these systems in. Increased use of renewable energies wherever possible: we love going into systems where there is some electricity required to run the heat pumps where they could be run off photovoltaics. To partner with other energy

suppliers where synergies exist and to eliminate the need to own HVAC equipment: we're selling energy.

So what are some recommendations we have to the committee? Obviously we'd be pleased to meet with any committee members at any time to discuss these further.

We think that all government-funded projects should be made to consider sustainable technologies, any of your SuperBuild projects with colleges, hospitals. Ensure that they consider sustainable technologies that are economically viable, not just capital-wise but in operating costs, that are capable of meeting the energy needs. With new buildings that use conventional technologies, why not make them demonstrate that sustainable technologies were not viable?

We encourage that design support be provided by the government to support alternative fuel sources for space conditioning. The federal government has a number of programs that have various degrees of success. CBIP would be perfect example. I don't know if any of you are familiar with that program. That's run by NRCan.

Work with municipal governments to allow increased occupancy densities or reduce property tax rates for new buildings that reduce greenhouse gas emissions. Perhaps there's a trade-off. What we encounter many times with owners and working with municipal governments is that they'd like to maybe put up another floor or two, but they're not allowed to. If they put a system in that reduces greenhouse gas emissions, perhaps there would be a solution there.

Encourage municipalities to permit private and public customers to utilize the flow of water from public water mains for the operation of heat pumps. You essentially have a free source of energy in the water mains that run through the city. Technically, there's no reason why heat exchangers shouldn't be connected to that.

Adopt the Model National Energy Code—this was developed by NRCan—and AHSRAE 90.1 as part of the Ontario building code. In our opinion, Ontario is very far behind the United States in updating the applicable energy codes. The bar has been raised, and this is a little beyond Earth Energy, but just in terms of minimal requirements for U-values etc, there's no reason why the building codes should be a decade behind.

Of course we'd love to have the PST exemption on equipment that reduces energy use and greenhouse gas emissions.

And, support demand side management for utilities and distributors of electricity.

I've gone through this quickly but I wanted to give you time to ask questions, so thank you very much. I hope I didn't rush through it too quickly.

The Chair: We have about a minute and a half per caucus for questions and comments.

Ms Churley: Thank you for your presentation. Can you describe quickly how this works technically?

Mr Unny: Essentially, you're circulating a fluid and the heat that you have in your building in the summer is dumped into that fluid through a heat pump.

Ms Churley: What the fluid?

Mr Unny: Water.

Ms Churley: It's just water.

Mr Unny: It's just water, but it's a closed loop, it's pressurized at 100 PSI. That water circulates through a pipe 400 feet into the ground, a closed loop. There's nothing environmentally bad about this at all.

Ms Churley: So that's really all it is?

Mr Unny: You're dumping your heat from your building into the ground, and when the fluid comes back out of the ground, it is at a much cooler temperature, so then you can dump more heat. It's just constantly circulating.

Ms Churley: So the high cost, then, is just that, the installation?

Mr Unny: There is a capital cost associated with putting the pipes in the ground. For a typical, let's say, 45-storey apartment building, you have to put 10,000 feet of pipe in the ground. Obviously, we'd love a solution that minimized that, but there's a lot of pipe that needs to go in the ground.

Ms Churley: So it wouldn't work for a retrofit, say, for public housing?

Mr Unny: Yes, it would.

Ms Churley: It would, OK. Suppose you had a public housing complex that needed retrofitting anyway? You'd have to dig a very deep hole.

Mr Unny: Yes. If there's a parking lot, for example, you could—obviously for a few days the parking lot would have to be disrupted, but essentially we'd go there. We'd have to contact utilities to make sure we don't interfere etc, but we're exempt from all EPA regulations. Whether that's good or bad depends on how you look at it. But there's nothing environmentally bad about our system. You get a drill rig, we buy the pipe. It's the same pipe the gas companies use, no difference.

Ms Churley: How long would it take to recoup your costs?

Mr Unny: We sign 50-year contracts.

Ms Churley: Fifty years, OK. Thank you.

Mr Hastings: Where in Canada do you have a specific commercial application right now in an industry or a multi-residential?

Mr Unny: I can give you many examples. Right now I'm working on a project in Woodstock, Ontario, a new apartment building. But in terms of existing ones that have been built over the last 10 years before this energy, there are many in our brochure there. Guelph Hydro put their head office in Guelph entirely on heat pumps.

Mr Hastings: Would I be under the misapprehension, then, that existing hydros and the architectural profession and all the players involved in this are more up to date than perhaps the energy bureaucrats? We had a briefing yesterday where geothermal was not considered a sustainable energy. They look at it in terms of Iceland or Wyoming.

Mr Unny: Yes, this is a problem with the industry. That's why we use the term "geoexchange." Geothermal, traditionally everybody thinks of volcanoes.

Mr Hastings: Localized.

Mr Unny: This is localized. In fact, George Bush's ranch house in Crawford, Texas, is entirely cooled with heat pumps. But does he come out and say that? No. The industry has had a marketing problem, and a geo-exchange consortium has been created—Earth Energy is a member—to address this concern. But as I said before, the EPA says this is the most viable solution for heating and air conditioning needs. There is nothing that competes with it.

The Chair: Now we have geoexchange clarified; that's great. We'll move on to the official opposition.

Mr Parsons: Just a comment, I think, more than a question. I had some experience with this a little over 10 years ago. We had an existing school, and the challenge was that the classroom on the south side with 40 students in it was hot while the classroom on the north side with 20 was cool. So we retrofitted the school with this system and gave each classroom a separate zoning. It was and continues to be a success. It has worked extremely well for the school.

Mr Unny: That's good to hear.

Mr Parsons: There were some higher initial costs than the conventional system. The challenge for the schools has been, although it's a great system, the funding formula no longer allowed that higher additional cost. In fact, the payback, if I'm remembering right, was eight or nine years.

Mr Unny: It could even be longer. Schools actually put horizontal systems in, so you're not drilling down, you're just laying the pipe in a soccer field, for example, where the costs are much lower. But the payback is very long, and that's why private companies don't do it. In a sense, that's why Earth Energy has been formed. We are willing to take those longer paybacks and save you the initial capital cost barrier.

Mr Parsons: Along with saving money, it greatly improved the quality of life in the classrooms.

Mr Unny: That's very good to hear.

The Chair: In my understanding, you're talking about pipes in the ground rather than using water from wells.

Mr Unny: You can use water from wells, as well. All the solutions are viable. The problem with using water from wells is that it's a groundwater aquifer. It's not that we introduce anything into it, but the permitting process is a lot more difficult now than perhaps it might have been five years ago.

The Chair: So what you'd be introducing is a thermal effect?

Mr Unny: Yes. The Ministry of the Environment will have no problem with it, but there is a permitting process; with the closed-loop system, no permits.

The Chair: Thank you very much. We really appreciate your coming forward with your presentation.

1520

ONTARIO SOYBEAN GROWERS

The Chair: Our next presenter is from the Ontario Soybean Growers, Matt McLean, the board's secretary. You have 20 minutes for a presentation, and what's left over of the 20 minutes we'll divide up evenly among the caucuses for questions and/or comments.

Mr Matt McLean: I want to start off by saying that I'd like to thank you for providing us the opportunity to speak with you here today.

I'm Matt McLean, and I'm board secretary for the Ontario Soybean Growers. That's an organization representing over 25,000 soybean growers here in Ontario.

What I wanted to speak to you today about is biodiesel. I'm going to follow along in the handout I've prepared for you.

Just a little bit of background: biodiesel is a non-toxic renewable fuel derived from lipid feedstocks such as vegetable oil or animal fats. It's made through a process called transesterification. That's kind of a fancy word. Basically it's a process where soybean oil or any vegetable or animal fat is reacted in the presence of a catalyst with an alcohol. What that does is create—as you know, oils are very viscous; it makes it a less-viscous liquid, more similar to diesel fuel.

I just wanted to briefly run through some of the benefits of biodiesel fuel. When burned in a conventional diesel engine, it curbs harmful exhaust emissions such as carbon monoxide, hydrocarbons, diesel particulate matter and aromatic compounds. As I said, it can be used in existing diesel engines with no modifications required and it also blends completely with conventional petroleum diesel. It actually can be burned in levels of 100% biodiesel, but most conventionally it's blended with petroleum diesel, and a 20% blend seems to be the standard blend used.

As I mentioned, renewable, cleaner burning, cleaner to the environment, increases fuel lubricity. That's an issue in striving to get sulphur out of diesel fuel. Sulphur is a lubricating property in conventional diesel fuel, so as we strive to reduce the sulphur levels in diesel fuel, this will be an excellent additive to add back into conventional diesel fuel as a lubricity additive. Increased cetane; biodegradable—it's four times faster than petroleum number 2 diesel; non-toxic—just a little number there, 10 times less toxic than table salt. It has a high flashpoint, meaning it's less flammable, safer to handle than petroleum diesel. The use of it would mean less dependence on imported oil and would extend the domestic fossil fuel supply for Canada. Expanded market opportunity for Canadian agriculture; I'm here on behalf of the soybean growers, and we see this as an excellent opportunity for an expanded, value-added use for soybean oil.

Moving along quickly, life cycle analysis: this was based on a study that was done by the national resources energy lab in the US. Back in 1998 they did a biodiesel life cycle analysis, and the results of that study have indicated that the energy balance for biodiesel is 3.24 to 1. Basically what that means is that for every one unit of fossil fuel that would go into producing biodiesel, biodiesel produces 3.24 units of energy. That's a very good energy balance. Also from that study they concluded that carbon dioxide emissions were reduced by

78.45%, and that's using 100% biodiesel; for a 20% blend, the reductions were 15.55%.

Also, there are quite a few points I've put down summarizing a US health effects study. Biodiesel was the first alternative fuel in the United States to go through what they call tier 1 and tier 2 EPA health effects studies. These are the results. I don't know if you want me to go through all of them, but there are some significant advantages to biodiesel as far as health effects. Some of them are: the ozone-forming potential of exhaust emissions from biodiesel is 50% less than that of conventional diesel; particulate matter, which is a cause for respiratory disease, was reduced by 30%; exhaust emissions from aromatic compounds such as PAHs and nitrated PAHs, which are compounds suspected of causing cancer, were substantially reduced by biodiesel compared to conventional diesel. PAH compounds were reduced by 75% to 85%, and nitrated PAH compounds were reduced by at least 90%.

A little bit of background about biodiesel in the US: it's a market that has been expanding incredibly over the last few years. Our organization is actually an associate member of the National Biodiesel Board in the US, which is a board working, insofar as commercializing, biodiesel in the States.

Some stats: in January 1999 there were very few fleets in the US using biodiesel, but as of January of this year there were over 50 major fleets which had implemented biodiesel programs across the country. These include government fleets such as the US Postal Service, the US Air Force, the army, of course the US agriculture department and the Department of Energy, and state fleets in several states such as Ohio, Iowa and New Jersey.

Currently in the US there are several efforts underway in several different states, and Minnesota is one that is leading the way, as far as implementing legislation requiring all the diesel fuel in that state to be blended with low-level biodiesel, up to 2%.

I also want to speak today a little about a Canadian opportunity. We've been members of the National Biodiesel Board for probably about seven years. We've been watching and learning what's going on in the States. Just recently here in Ontario a company by the name of Biox Corp has constructed a one-million-litre-per-year demonstration plant in Oakville, Ontario. That plant is based on a new technology which was developed right here in Ontario at the University of Toronto by a Dr David Boocock. It's basically a more energy-efficient way of producing biodiesel than what has currently been used to a great extent in plants in the US. Biox intends to manufacture and sell biodiesel plants in 2-, 5-, 10- and 15-million US gallon capacities. With this technology, they believe they can actually make biodiesel price-competitive with conventional petroleum diesel.

This brings up a point. You might say, what is the drawback to biodiesel? Over the past few years the main drawback to having biodiesel commercialized and on the market has been its price; it has traditionally been two to three times the price of conventional diesel, which makes it a little less attractive. This company believes they will be able to make it price-competitive with petroleum diesel.

In the States right now, one of the main reasons for its use picking up has actually been a subsidy provided by the United States Department of Agriculture. They subsidize the production of biodiesel to the tune of, I think, $1.20 per US gallon, and that's for biodiesel made from soybean oil.

One of the things to keep in mind is that Canada is a net exporter of vegetable oils and a net importer of soybean meal. New markets for vegetable oils would mean an increased demand for soybean oil here in Canada, and especially Ontario, and that would therefore increase the domestic crush of soybeans and reduce dependency on imported soybean meal. Those are the two basic products coming out of soybeans, soybean oil and soybean meal. The meal is used predominantly in the livestock feed industry and the soybean oil traditionally goes to things such as margarine. Right now, the way things are, what's limiting the crushing of more soybeans here in Ontario has been trying to find a market to get rid of the soybean oil. That's kind of the limiting factor. We're trying to see: if we can increase the market for soybean oil, we could increase crush of soybeans here in Ontario.

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I've also got a little bit of information on market size, comparing the US diesel market to the Canadian diesel market. A point to keep in mind is that if all the soybeans and canola, which is another major crop here in Canada, were crushed in Canada and used for biodiesel production, it would amount to about 3 million metric tonnes of oil, or nearly 1 billion US gallons of biodiesel. In reality, all the oil is not going to go for biodiesel. I think a good estimate would be if 25% of those vegetable oils went toward biodiesel production, that would satisfy about 6% of the diesel fuel market in Canada. Therefore, I don't see it as a really big threat to the petroleum industry, insofar as you're never going to take over the use of conventional petroleum diesel by the use of biodiesel. In many instances, I think it's quite a complementary technology for the petroleum industry.

I would like to run through this quickly to finish up. I've listed five policy recommendations that I'd like to be considered. The first one, and probably the most important on the list from our organization's standpoint: we feel it's essential that biodiesel have the same federal and provincial excise tax exemptions currently in place for other alternative fuels. Excise tax exemption has been a great policy as far as getting industries up and going, as you know, with the ethanol industry. I think this would be a considerable help to actually having biodiesel produced commercially and sold and used here in Ontario.

Another thing is, both the provincial and federal governments need to develop a biodiesel procurement policy and basically lead the way in the use of these renewable fuels as a viable alternative to burning fossil fuels. Just through our involvement in the National Biodiesel Board in the States—it's an area that has really

picked up. The use and commercialization of this fuel in the US has been government agencies procuring and using this fuel and setting the standard.

Some other things would be funds and interest-free loans and other incentives that would provide rural communities the ability to establish value-added, agriculture-based industries, basically maybe setting aside money or incentives to actually have some biodiesel plants go up here in Ontario.

I also think it's necessary to have incentives provided to municipalities and transit commissions to use alternative fuels as a means to curb harmful exhaust emissions and pollution.

Possibly, consideration should be given to a mandated renewable fuel standard. This would be that fuel be required to contain a certain percentage of renewable content for large urban centres experiencing problems with pollution and smog. This is an initiative that's really been big and is starting to take off in the States at the state level—a mandated renewable standard—and it's also working its way up to the national level.

I guess that's all I have to present. You're welcome to put some questions.

The Chair: We have about two minutes per caucus, starting with the government side.

Mr Jerry Ouellette: Thanks for your presentation. We heard this morning about corn stalks and corn cobs being utilized. Is it just the bean that's utilized here?

Mr McLean: It's actually the oil that's crushed out of the bean.

Mr Jerry Ouellette: Just out of the bean, not out of the plant itself?

Mr McLean: No.

Mr Jerry Ouellette: What's the current production level in Ontario, or is there any?

Mr McLean: Currently there is no commercial production of it in Ontario. As I said, there is the million-litre-per-year demonstration facility in Oakville.

Mr Jerry Ouellette: You mentioned the US$1.20-a-gallon subsidy. Is that what it would require in order to be cost-competitive?

Mr McLean: I think in the US that has been a requirement because they're still using an older technology, and the fuel is still at least twice as expensive as conventional, so it's definitely necessary there to make it competitive. You'd have to speak directly with the people from Biox, and I think you will have the opportunity. They believe they can make it pretty much competitive cost-wise with conventional diesel, so there may be room for that type of incentive.

Mr Jerry Ouellette: But that's only with a subsidy, or a tax exemption?

Mr McLean: I think they're counting on a potential tax exemption.

Mr Jerry Ouellette: That's typically for a five-year period, after which time they expect to be taxed the same rates as conventional fuels.

Is there the current infrastructure in place to distribute this, and can it be utilized in the current systems that are out there? Also, what about utilization in home heating fuel for it?

Mr McLean: I'll go back to your first question on the infrastructure. It basically, as I said, blends completely with petroleum diesel. As far as infrastructure is concerned, transportation, holding tanks and stuff would be basically the same infrastructure that's in place right now. At terminal facilities, I would imagine they would have a separate tank with biodiesel where they'd blend it in with their conventional diesel. But as far as transportation and stuff, it would be all the same.

Mr Jerry Ouellette: And home heating?

The Chair: Thank you very much. The official opposition. Mr Parsons.

Mr Parsons: A technical question, because I know very little about this. I own a number of tractors that have diesel engines, and I know if you leave summer diesel in, in the winter you really have jelly in the tank.

Mr McLean: Yes.

Mr Parsons: Does this have the same characteristics?

Mr McLean: Yes. Compared to conventional diesel, its cold flow properties are slightly reduced.

Mr Parsons: OK. The other thing I noticed—because one of the neat things in life is getting a diesel started in the winter—it has a higher flashpoint.

Mr McLean: Yes.

Mr Parsons: Is that a problem in the winter months?

Mr McLean: I haven't heard anything about the flashpoint being a problem in the winter months. As far as winter operability, I don't think you'd want to run 100% biodiesel. Actually, there's a company in Montreal running 20% in the winter in their facility.

Mr Parsons: OK.

Mr Peters: It's good to see you again, Matt. Matt and I had an opportunity, Mr Chair, to see a constituent in my riding, Jay Curtis, who has been experimenting with biodiesel and is operating one of his tractors. I'll tell you, it smelled like French fries being cooked inside that tractor. It was really quite amazing.

Matt, if policy changes were to happen in Ontario, what kind of co-operation in this area—for example, you've got General Motors diesel building locomotives, you've got the Sterling Truck plant in St Thomas, the Navistar plant. Do we need to have some co-operation from these large industries if we were going to go to a B20, as an example?

Mr McLean: Definitely, everything helps, having everyone co-operate and work together, and to a great extent that's already been initiated in the US. As you know, a lot of these companies have headquarters in the US. Things like Cummings, Detroit Diesel, and Cat diesel engine specifically are quite onside with the use of biodiesel and actually warrant it in their engine warranties. So I think that's definitely—yes, we'd have to work with the Canadian counterparts and make sure everyone is onside with that as well.

Ms Churley: Thank you for your presentation. So you're not in competition with any of the other alterna-

tive fuels like ethanol and others; you just want the same treatment.

Mr McLean: Basically, yes. I guess—

Ms Churley: Are you in competition in some way with any of them?

Mr McLean: We'd like to see that biodiesel would be kind of—what ethanol is to gasoline, biodiesel would be to diesel.

Ms Churley: OK. Why aren't you included in the financial incentives for alternative fuels?

Mr McLean: I think biodiesel has been a much newer thing, developing in the States over probably the last 10 to 12 years. As I say, we've been involved with that process for about the last six or seven years.

Ms Churley: So you're in the process now of trying to be included, and a recommendation from this committee, I assume, would help with that.

Mr McLean: Yes. I think our number one priority at this point would be to be included with the other alternatives.

The Chair: Thanks very much for your presentation. It is interesting to see how competitive biodiesel is getting to be.

Mr McLean: Yes. Great. Once again, thank you very much.

1540

NATURAL GAS VEHICLE CO-OP

The Chair: We move on to our next presentation, the Natural Gas Vehicle Co-op, Ray Wolting, chair. Ray, if you'd come forward. You have 20 minutes for your presentation. What's left over from your presentation in time, we'll share equally among the three caucuses. Please state your name for the sake of Hansard, and you can start any time.

Mr Ray Wolting: Thank you. My name is Ray Wolting. I'm the chairman of the NGV Co-op. I have handouts coming. They'll be here any minute for you. I left mine in the truck, and my colleague has gone to photocopy 25 more.

Let me begin by thanking everyone for giving us the opportunity to present our case for alternative fuels and taking time out of your schedule to come to London. I know these last couple of days have been very busy for you.

We are the NGV Co-op. We are a member-owned organization in southwestern Ontario that coincides with Union Gas's franchise area. We have eight conversion shop members and three associate members. Some of us have been in the NGV business since 1984.

The co-op was formed to make the public more aware of natural gas as a vehicle fuel and the co-op has been in existence for three years. It will be three years this January 1.

We have co-op shops: Agri-Tech Automotive in Brantford; ATW Automotive in Chatham—that's where I'm from; Cosimo's Garage in Hamilton; Downtown Auto in Kitchener; Hi-Tech Automotive in London; MSJ in Windsor; Warren Automobile in Cambridge; and Yugo-Tech in Mississauga.

This is my colleague with your handout.

Mr Jerry Lacina: Good afternoon. My name is Jerry Lacina, and I'm with Union Gas.

Mr Wolting: What we provide our customers with is an after-market conversion system that enables their vehicle to operate on both natural gas and gasoline. We also convert forklifts and ice resurfacers. Both those types of vehicles, those off-road machines, are being converted because of air quality restrictions or concerns in arenas about indoor air quality and also in plants with the forklifts running indoors. We provide service for natural-gas-powered vehicles, both conversions and factory-built. Some of our members own and operate refuelling stations to fill vehicles with natural gas. We also market and advertise NGV, along with Union Gas. We provide management for a cylinder rental program that Union Gas owns at the present time as well. We are also a member of the Canadian Natural Gas Vehicle Alliance, which is the national voice for NGVs.

We are on page 5 now. Thank you for handing those out. My apology for not having it.

Mr Parsons: They're warm.

Mr Wolting: They should be warm.

Conversion of a vehicle to operate on natural gas: the installation of that involves carburation equipment and regulation equipment. The carburation equipment is the part of the conversion that mixes the natural gas with the air so the engine can burn it. The regulation is the part that reduces the fuel storage pressure to a pressure at which the engine can accept it. Also we install a fill point and cylinders. The electronic interface—we have to interface with the OEM computer, and that technology is approaching OEM technology and is becoming very complicated and costly. Most conversions are bi-fuel. The vehicle retains the original gasoline system and the vehicle can operate on either fuel: gasoline or natural gas. Some systems prioritize natural gas and they won't run on gasoline if there's natural gas in the system. Conversions, we believe, are necessary to justify investing in and expanding the existing refuelling infrastructure.

Factory-built, natural-gas-powered vehicles are typically dedicated and monofuel. The engines in those vehicles are optimized to run on natural gas. They are designed by the engineers to run on natural gas as the only fuel. Compression ratios are increased, valve timing is different and the exhaust systems are different. They also provide a factory warranty. The emissions in those factory vehicles are certified to ULEV, which is ultra-low emission vehicle, or SULEV, which is super-ultra-low emission vehicle. Those are Californian standards, and presently the natural gas Crown Vic is the cleanest internal combustion engine vehicle, the factory natural gas one. However, it's more expensive than a conversion. They are manufactured in Ontario. The Crown Vic is manufactured in St Thomas.

Mr Peters: The St Thomas assembly plant, the only plant in North America.

Mr Wolting: That's right. That's the only place.

Factory-built OEM versus conversion: the NGV industry has been actively promoting factory-built OEM natural gas vehicles. Unfortunately, we have not been as successful as we had planned. A number of factors have contributed to this. Many customers are not comfortable with dedicated monofuel vehicles. The customer must be in the market for a new vehicle of the type offered by the manufacturer. It's not like the customer can go and say, "I want a Chevy pickup with these colours and these options and put natural gas on it." There is a limited number of vehicles you can buy with the natural gas option on them. We also think the resale value of the vehicle might be questionable halfway through the life cycle if it's dedicated to natural gas.

The conversion of gasoline vehicles is a transitional step in supporting OEMs. The advantages are that it supports the development of the refuelling infrastructure needed to make dedicated vehicles feasible. The customer's existing vehicle can be converted or the one he purchases can be converted. The resale value is maintained because the conversion can be removed.

The future of the NGV industry will definitely be built on OEM products. The after-market conversion business is present for two significant reasons: to provide a basis for the development of the infrastructure that dedicated OEM vehicles require and to provide consumers with an opportunity to become familiar with NGV before making a commitment to factory-built vehicles.

With regard to the environment, natural gas is cleaner and safe. This is the same fuel that is used to heat homes, cook meals and dry clothes. From a vehicle emissions perspective, NO_x , oxides of nitrogen, is 43% less on natural gas. Carbon monoxide is 74% less. SO_2, or sulphur dioxide, which is an acidic particle that irritates lungs and inhibits lung function, is 63% less. VOCs, volatile organic compounds, are 93% less, and that figure is really high because a natural gas system is a closed system; it's totally sealed when the vehicle is running. These VOCs are the evaporative emissions that happen with a liquid fuel as you're opening the gasoline cap or gasoline in the tank evaporates and is captured through the evaporative emission system. But NGVs don't have that problem. Carbon dioxide is 23% less, and that's the number one greenhouse gas. We believe that 40% of all smog is due to automobile emissions. The OMA estimates that 1,900 Ontarians die prematurely due to smog exposure.

From a safety perspective, natural gas has a higher ignition temperature, a narrower flammability range. It's lighter than air. In the event of a leak, it dissipates into the atmosphere. It floats up into the atmosphere. The natural gas cylinder is made of steel and is very strong. No licence is required to refuel natural gas; you can refuel that yourself at many self-serve stations that exist in Ontario already. It's also non-toxic.

Why would a conversion business support factory-built products? The major portion of our current business is the service and maintenance of gasoline-powered vehicles. For the NGV industry to be successful, a mass-produced, factory-built product is required. We would provide service and maintenance, and in some cases refuelling, for those vehicles. Conversion technology costs are escalating. Conversions are the bridge until the OEM product is readily available.

What can the provincial government do to help? We think they can provide leadership by example and provide a favourable arena for the growth of natural gas as a vehicle fuel. The current program, which is a $1,000 provincial sales tax rebate, has been in existence since 1985 and has been very successful, but needs to be updated. Some examples are: the purchase of NGV-powered vehicles for the provincial fleet; provide a full PST rebate for factory-built NGV-powered vehicles; increase the present PST rebate of $1,000 to $2,000 for after-market conversions; provide no-charge vehicle registration for NGV-powered vehicles; provide direction and incentives to the municipalities for vehicle procurement, maybe through organizations like the Association of Municipalities of Ontario.

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Facts to consider: natural gas is a Canadian product. Natural gas is clean and safe. Natural-gas-powered vehicles are available now. Ontario has more than 65 NGV public refuelling stations; on-site refuelling is available. Many of the factory-built vehicles are made here in Ontario. Many of the NGV components are made here in Ontario. Ontario is a major exporter of NGV products and technology. Many jobs in Ontario are related to this business. Ontario taxpayers want a solution to its smog problems. There were 23 smog alert days this summer in the Toronto area.

Just some final thoughts: in reviewing our business experience, it's obvious that the NGV industry has benefited tremendously from the existence of the PST rebate. Much valuable experience has been gained. However, in the final analysis, the customer's motivation to purchase an OEM NGV-powered vehicle must outweigh the hurdles present in the current sales equation. Buying an OEM is much more complex than purchasing a gasoline model and converting it. Even with the aggressive incentives in place, persistence and time are necessary on the buyer's part. So until a customer can easily execute the purchase of an OEM, the conversion option is necessary for the industry to grow. With very little extra effort, a customer can have his vehicle converted.

Owning a natural-gas-powered vehicle brings its share of benefits, some measurable, such as lower fuel costs, some less tangible, such as the environmental benefits and a renewed hope, as an NGV vehicle owner, that more people make the worthwhile investment in NGV. The choices customers make with respect to energy usage must be founded in sound economic, environmental and engineering facts. Only when a customer becomes informed and involved will they be able to choose an alternative fuel wisely.

Thank you for your consideration.

The Vice-Chair (Mrs Marie Bountrogianni): Thank you very much. We have about seven minutes for questions, about two minutes per caucus, and we start with the official opposition.

Mr Parsons: I don't have a question. I found that extremely interesting and informative.

Mr Peters: A couple of questions. Using the Crown Victoria as an example, you know that you can buy one off the lot for $35,000, say, for gasoline powered. If you were to ask for that same package with natural gas, how much more is that car going to cost? A lot of Crown Victorias are being used by police services around the province.

Mr Wolting: Yes, and taxis. The option, I believe, varies from vehicle to vehicle. The average is a $7,500 option. There are grants in place from the federal government. There's a $2,000 federal grant if you buy an OEM vehicle and, at present, a $1,000 provincial sales tax rebate from the province of Ontario. The utility company, whether it be Union Gas or Enbridge, kicks in $500, and Ford Motor Co has a $2,000 rebate as well.

Mr Peters: The second question is, we hear what gasoline mileage would be per kilometre; you get so many kilometres to the gallon. How would natural gas compare to the fossil fuel gasoline—higher or lower?

Mr Wolting: On a factory-built vehicle the natural gas is more energy efficient, so the miles per gallon probably would be slightly higher. On a conversion it would be about the same.

Ms Churley: Thank you for the presentation. We had a presentation in Ottawa as well this morning on this. One of the points that was made, and you've reinforced it, is that most people don't know about this. There are misconceptions, there are concerns about safety. I think a lot of people have fears of natural gas, thinking in terms, I suppose, of explosions. You put our minds to rest on that, I think, but there's a general public perception about that. But also, we were told that in fact there are people buying converted vehicles now they and don't even know it; that they're out there but that they're being sold from some dealers, and people aren't even aware that they're buying vehicles that have a partial conversion. Are you familiar with that or did I get it wrong this morning? That's what I thought somebody said.

Mr Wolting: I'm not sure I understand. There are customers buying vehicles with natural gas on them who aren't aware they have that option?

Ms Churley: Yes. Did anybody else hear—

Mr Hastings: If the make of the vehicle and the ethanol-added components in Ford products—

Ms Churley: So it was ethanol. OK.

Mr Wolting: In that regard, with ethanol, with that liquid fuel, that might be possible.

Ms Churley: But it's not the case with natural gas?

Mr Wolting: I don't think so.

Ms Churley: So that's only with ethanol.

Mr Wolting: I believe so.

Ms Churley: What do you think needs to be done—I know you spoke about this briefly—to make people more aware of this option?

Mr Wolting: We need to target the heavy users, the fleets, the police departments, taxis, and we need to get the message out. We've been trying to do that with a limited budget. It's just a matter of education. More infrastructure would help. We kind of have a chicken and egg thing. We need more stations so more people will buy vehicles, and we need more vehicles so more people will invest in putting stations in.

Mr Hastings: Gentlemen, it's an interesting case you make, but I'm not sure you're making the case. I'm starting to think we're getting all these technologies and there's better engineering—economic, environmentally sustainable. Where's your business case for natural gas vehicles in terms of the fleets? You say the PST exemption has been a success. OK. How much of a success? A limited success? How many fleets have been converted out of the potential number in Ontario or Canada?

You see, I'm having a problem and I think this committee is going to have an increasing problem as they start hearing more presentations about all the great advantages, and there inevitably are in a lot of these situations, but we have to look at some hard numbers as well. I'm wondering how many jobs are created, as an example. The corn producers said there are jobs created. I don't doubt it. How many? I don't need to have the exact number, but we're not getting a good, solid situation, as much as we can. I wonder if you would agree with that perception.

Mr Wolting: I know there are almost 13,000 vehicles in Ontario now. I can't equate that to jobs.

Mr Hastings: Does the alliance know about how many are in fleets out of that 13,000? Would there be 100?

Mr Wolting: I don't know. I might have—

Mr Lacina: There are certainly a number of fleets that would be considered large fleets, say, over-50-vehicle fleets. For example, here in London the Thames Valley District School Board has a fleet of approximately 75 natural-gas-powered vehicles in the commercial sector. As far as other applications, the city of London has all their ice resurfacers running on natural gas as well. That's a very strong environmental stance that the city has taken because the air quality in arenas is not great. As far as other existing fleets, they would be typically in the five- to 15-vehicle range, like plumbing and heating, the HVAC contractors, people like that.

As far as what the program has been in the past, it's been successful because there has been government leadership at the provincial level, as well as at the federal level. But what we're after today is an extension of the existing program to make that economic equation that we discussed that you want the numbers for. People judge with their pocketbooks and we need to make a more viable economic proposition.

Mr Hastings: Mr Ouellette would like to make a case against you.

Mr Jerry Ouellette: Essentially, the Alberta energy board claims that gas production will peak by the year 2003 and then decline 2% per year after that. Also the US energy board claims that by the year 2015 there's a 45% increase expected in demand for natural gas. The time frames for the new lines coming on, 2008 to 2010, will only replace the current use, never mind the increasing demands. How are we going to fulfill that demand? You mentioned the availability of service outlets, with 450,000 residents in the region of Durham and one location. Gas hydrates technology: how far along on that are we, and do we have any replacements to take into account the demand?

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Mr Lacina: Speaking on behalf of the natural gas industry, we're hoping to see increased demand for the product as a gas utility in the industry as well. The actual vehicle segment that we're addressing here I don't believe will tax the storage of natural gas or the existing supply, or future supplies to the point—I guess if it did we'd all be able to retire in the lap of luxury, if we had that many vehicles running.

Unfortunately, it's still an economic and environmental decision people need to make to adopt using natural gas as a transportation fuel. For example, the city of London here runs 48 buses on natural gas. The city of Hamilton was the leader in 1984 with the first transit property. They have, correct me if I'm wrong, well over 80 buses on natural gas right now. Those are some of our success stories, but there isn't the significant critical mass that I think would drain any source of natural gas away from a power plant in California.

The Vice-Chair: I apologize, but I do have to end the questioning there. Thank you very much for your presentation and for your answers. We really appreciate it and we'll take everything under consideration.

Mr Lacina: Thanks for having us.

PLUMWAY ENVIRONMENTAL

The Vice-Chair: The next presenters, Plumway Environmental, can make your way up. Are you Mr Kenney?

Mr Robert Kenney: Yes, I am.

The Vice-Chair: Welcome, Mr Kenney.

Mr Kenney: Thank you. I hope I have the right forum.

The Vice-Chair: You have 20 minutes, which also includes questions and answers if you would want to allow for that.

Mr Kenney: OK. I'd rather have the questions and answers. I'm one of the small companies in Windsor and we're in the plumbing, heating and electrical business. We do a lot of radiant floor heating. Over the years we've been working on developing a process where there would be a heat exchanger where we can use some existing energy that we are pretty sure is going to work.

There's some more research that has to be done, but we don't have the mechanism to take it public without losing the proprietary nature of it and we don't have the resources to complete the task in a timely fashion. We would like to be able to show the province what it is because we know there is an environmental benefit to it. We weren't doing it for an environment practice, but that fell out as a side thing, and when some of the engineers got into it—it's supposed to be profound.

The Vice-Chair: Excuse me. What exactly does your company do? What part of the environmental?

Mr Kenney: Mostly, we do plumbing, heating, air conditioning, electrical and a lot of radiant floor heating. In most cases with air conditioning you're moving heat from one place to another. You're moving it out of the house. You don't really cool anything; you transfer heat from one place to another.

With heating, if you're using geothermal or solar, you're doing the same thing: you're moving it from one point to another point. If you're using natural gas or electricity, you're creating it, you're burning it, you're using up resources.

We have a method of transferring heat that exists that would give possibly the same benefit as, say, a ground source or solar system that people can have in the country in an urban setting. Our footprint is probably between 100 and 200 square feet on the property. It won't be seen.

If we could show it without losing the proprietary nature and let your environmental people look at it, we're sure that you may want to participate. We will get to it eventually, but by the time we develop this thing, there'll be some legislation required to allow it. I'm having problems putting in a pilot program now because of legislation—the municipality doesn't understand it. It's cumbersome. If we do make it work, which I'm sure we will, there will probably be some legislation, not to make it happen but to allow it. It would be better for you to be involved along the way.

The Vice-Chair: Do you have any handouts or anything at all describing this?

Mr Kenney: No. What I would like to do is if there's some way we could have—I can give you an example without giving anything away. I think we can save between 15% and 20%—it's not a magic bullet or anything—on your heating-cooling bill. For instance, in cooling, we would be using your rainwater. We have a method to use the rainwater. Right now they're going around disconnecting eavestroughs because the sewers are overloaded. We have a way of controlling that, to leave all your things hooked up, use that for your air conditioning, because we want to transfer the heat from in the house to outside. So we'll let it go out into the sewer system where it doesn't hurt anything, and we have a way to do it, if that gives you an idea.

The same is true with heating. We have a mechanism like a heat exchanger that will work, but you have to see it. I have to be able to tell you about it.

The Vice-Chair: I think at this point, given that you aren't in a position—for good reasons—to show us your product, if you leave your name and your contact numbers with the clerk, confidential meetings can be arranged with staff from the Ministry of Energy, Science and Technology, and the Ministry of Economic Development and Trade, where you would not be losing anything or risking anything by having them.

Mr Kenney: That's good if we could do that, because I'm actually starting to feel guilty about how long this is taking. If I just put it out into the open, I'm going to be kicking myself for years for not keeping my mouth shut.

The Vice-Chair: We understand. Would that be OK with you?

Mr Kenney: That would be fine. I'd be happy if we could participate—

The Vice-Chair: OK. If you have a card or contact numbers to leave with the clerk, we can arrange for those meetings to take place. At this point, unless there's disagreement on the committee, there wouldn't really be much point in asking questions.

Mr Kenney: I am talking maybe only 15% to 20%, but that's less natural gas, less electricity. What I understand is that's exponential, the savings from the people to the environment, so—

The Vice-Chair: Well, we look forward to some day reading about it.

Mr Kenney: It's not a big thing, but—

Mr Jerry Ouellette: I'd just—

The Vice-Chair: It actually is the NDP's turn first.

Mr Jerry Ouellette: OK.

Ms Churley: No, go ahead. I'm interested. I understand you can't tell us all the details today, but I'm interested in hearing more about it in the future.

Mr Kenney: Thank you.

Ms Churley: But go ahead.

Mr Jerry Ouellette: You're speaking of new technologies and something new that you're trying to bring along. Have you accessed, or tried to access, any federal or provincial assistance?

Mr Kenney: Yes, the federal government is willing to pay to fund it—the National Research Council—but they want me to get involved with one of the major utilities, and I don't want to do that. I'm going to be affecting their balance sheet; it might be small, but how are they going to—

Mr Jerry Ouellette: OK. I'm just checking to see if you—

Mr Kenney: Actually, I should clarify something. It's not exactly new technology. I'm borrowing technology from other things to accomplish something that's new. The engineering challenges to make this work are minor. I've had professional people, like a doctor of engineering. The challenges are minor to make it work. The problem is going to be having government co-operation for making it work, and participation, because frankly, what's a lot of money to me is not very much in the scheme of things of what little there is left to do.

The Vice-Chair: Thank you very much, Mr Kenney. Please leave your contact numbers with the clerk, and those meetings will be arranged.

Mr Kenney: Thank you very much.

The Vice-Chair: Well, committee, for the first time in the day, we are ahead of schedule. Would you like to continue?

Mr Jerry Ouellette: Oh, yes.

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COLLINGWOOD UTILITY SERVICES CORP

The Vice-Chair: OK. If Collingwood Utility Services is here, we can begin. Please state your name.

Mr Ed Houghton: My name is Ed Houghton. I'm president and CEO of Collingwood Utility Services Corp.

Mr Darius Vaiciunas: I'm Darius Vaiciunas—I know it's a tough one.

The Vice-Chair: Not as tough as mine.

Mr Vaiciunas: You're right. I'm load management and regulatory coordinator for the utility.

The Vice-Chair: Welcome, gentlemen. You have 20 minutes, which includes questions and answers.

Mr Houghton: Thank you. I'm going to speak very quickly and then let Darius talk about the technical aspects.

First off, I'd like to congratulate you for looking into this, because I certainly think it's very much needed.

I wanted to give you a little bit of background on Collingwood. Even though we are small and we do live up in God's country, we have been very much involved with the deregulated market. In fact, we embrace the efforts of the government. Again, I'm currently president and CEO of Collingwood Utility Services. I have been fortunate enough to be on the board of the IMO, so I've been very much involved with looking at the new rules and regulations.

We've also been very much involved with the market commissioning task force putting together all the tools that are going to make the new systems work. Darius has been very much involved with the Ontario Energy Board with some of their task force, so I think that we do really know what we're speaking about.

I should say right off the bat that we're not here to sell you anything. Collingwood has nothing to sell. We just think that we have some experiences and we think that we have a system in place that others could have in place that could in fact help us reduce the requirement for fossil fuels. Again, we're not going to be talking to you about different types of fuels; we're going to talk to you about the replacement of those fuels, because, generally speaking, fossil fuel is used for peaking plants and what we're talking about is taking some of the requirements of that peak and putting it into the valleys of our management systems.

How did we start in Collingwood? We started almost like this, way back in 1995 when there was a capacity shortfall in the Collingwood area. We worked with the

old Ontario Hydro, and the solution that Darius is going to be talking about is the one that we came up with. It works very well today and is going to work very well in the future as long as the message we get across—hopefully through this committee—is that load management systems shouldn't be put on the backburner for first generation, what they're calling performance-based regulations, but should in fact happen today.

I'm going to give you a little bit of a scenario before Darius talks about it from a technical perspective. If I was to tell you that today Collingwood—and again I'm not selling anything, but Collingwood currently looks after what we call our Hot Water Dollars program, or load management program, where we actually control water heaters in Collingwood, Port Elgin, Southampton, Parry Sound and Thornbury. What we also do is actually control a small lake in Parry Sound.

What we do is when the system starts to peak, when there's a requirement to bring on those fossil fuel plants, we start shutting down water heaters. That doesn't mean that we're not going to allow people to have hot water. We actually manage the system.

This isn't new technology; this is technology that's used in the US. We also can use similar technologies for looking after heating systems and air conditioning systems. To give you another small example of that, if there are three people who need to have a heating system in their home and we know that a heating system uses about 20 minutes of heat an hour, instead of those heating systems coming on at will and causing a stacking of energy and the requirement for energy, and a requirement ultimately for a fossil fuel plant to be called upon, we're saying, "Let's manage that." Let the first household come on for the first 20 minutes and shut down. We'll call on the second household for 20 minutes and shut down. We'll call on the third household to come on and shut down for the final 20 minutes. Again, what we do is we have a lump of energy and we're not doing that times three, because as always, a lot of times those sit on top of each other. Those systems are available and, again, Collingwood is using them right now, and I think it is very wise for us to continue to use those in the future.

That's all I want to say. Darius is going to talk more technically in a minute here.

Mr Vaiciunas: I just wanted to touch in on the fact that most of the time people think about load management from utilities as strictly a peak-clipping kind of concept. But when we stepped into the load management concept originally—and that's why I'm so pleased that this committee has been formed—we looked at load management as not just peak-clipping but a combination of a lot of different things.

The project that we got involved in looked at not just the peak-clipping portions, but it also looked at redistribution of power, bringing power in from other locations, releasing the load on particular substations and lines and transformer systems, and it really did make a big difference when we looked at the big picture. We talked to industries, we talked to the towns, we talked to the cities and we managed the load growth within those municipalities in that area. So it's a total package. It's load management rather than just that one thing called peak clipping.

The technology, however, is really what we're looking at in trying to keep that alive. In the US, the technology for load management in managing loads or direct load control really took a nosedive when they started their deregulation process. It was going great guns; it was huge. In some places it was up over 300 megawatts of controllable load. If you think about it, that is a lot of significantly sized generation facilities. All they do is throw a switch and they've got 300 megawatts turned off at a really critical time. Typically, our peaks are hit in our province for only about maybe 100 hours of the year, period. That's really all we need to manage, rather than building generation facilities for 100 hours of use. That is something that is really embraced heavily in the US.

Once deregulation hit the US, the big problem became the G&Ts—the generation and transmission companies—that were operating those plants and the control facilities. The reason they ran them was that, rather than building another generation facility that would only run 100 hours a year, they decided it was much more cost-effective to put in load management operations. They could then mandate the use of these things throughout the various utilities they worked with and they could operate the systems when those peaks occurred. That saved them the trouble of building new generation facilities.

That was really great until such time as they deregulated, and then the generators' prime goal was no longer to make sure that there was sufficient capacity in those states, but their prime goal became their responsibility to the shareholders: make money; sell every kilowatt hour you can, whenever you can, wherever you can. So now building a plant and selling power elsewhere meant more money in the bank. So they started dropping all of their load management programs.

We're really afraid that if we don't embrace load management at the onset of deregulation here in Ontario, the same type of thing is going to happen. I know in the retail settlement code the OEB has stated that, yes, we do need to address load management. But unfortunately, they don't feel they have time to do it right away and they're going to wait until maybe the second generation of the performance-based regulations. So that could be two to three years down the road.

What that means for the existing systems, where people actually have things in their homes, is that the utilities have no way of maintaining those systems alive, and those systems will disappear, because you're not recognizing that customers work with you in this project. The customer is going to turn around and say, "Joe down the street isn't doing it. Why should I do it?" The social good isn't good enough for a residential customer, nor is the social good good enough for an industrial/commercial customer. They want to see something happen. There are ways, I'm sure, if we get together as an industry and work toward it and copy some of the success stories

we've seen elsewhere, not only here in Ontario but in the US and overseas, that we can actually come up with a good system of making sure that these things keep going.

I'm not going to go through this presentation verbatim because—I don't want to insult you; I think you can read—you'll have plenty time to go over it, and I think it'll be a lot more interesting that way. If you ever have questions, we really welcome the opportunity to chat. This is near and dear to our hearts.

But what I would like to do is take you over to one of the appendices, if you'll go back to appendix 8, a small graph, just so we can give you a good picture of how this actually works. Really, what we're trying to do is that during those short periods of time when there is a strict capacity shortfall or a requirement to bring on another fossil fuel generation facility to meet those peaks, rather than do that, we institute load management; we institute our load control. What that does is, it sheds that load. It doesn't eliminate the energy requirement. The energy requirement is still there. But it moves it over an hour or so. Once you've moved it over an hour or so, that peak has been taken care of. If you do enough of these things, and we currently in Collingwood, through our system, through our co-operative effort with all of these other utilities we deal with—Parry Sound, Port Elgin, Southampton, Thornbury, Collingwood—we actually, at the flip of a switch, can control five megawatts of load.

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Five megawatts may not sound like a big number to a generator, but back on July 24 the IMO itself turned around and made a big statement over the fact that they had just crested 24,000 megawatts, and once all of their numbers are in, they may actually exceed the all-time record high of 24,007 megawatts. They're talking about a really big deal about going over that extra seven megawatts. At that very time, we had five megawatts of power turned off and actually moved over into another period. So it would have been 24,012, had we not had our systems running.

It all adds up, and we're not the only ones out there. There are a lot of other utilities that have these things. That graph just shows you how it moves.

On the very next page: we ran a test. We went to an all-electric condominium in Collingwood that had 71 electric water heaters in it. What we did with those 71 electric water heaters was, we turned them all off at 8 o'clock at night and we turned them back on at 11. So any energy that those water heaters would have required during that period of time was still used, but it was used later on. The reason we did that was because that's when the prices were cheaper for the customers. So we're just giving them an opportunity to pay less for their power. You can see very readily in that graph, at 8 o'clock, when we turned off those water heaters, a significant drop in that load for that one building. You can also see at 11 o'clock, when we turned them back on, how the energy requirement for that building went up. That is a true graph, that's a real-time graph, and we monitored the loads in that building.

I think it's very important that we don't miss the opportunities we have. We don't want to fall into the same trap that we ran into in the US when they deregulated. Right now they are scrambling to institute new load management programs and basically resurrect things that they had in place. They had their answers in place and started taking them out. We don't want to miss that opportunity. We want to keep going with it.

I'll pass this around and you can have a look at it. This is a load controller. You'll probably recognize it as a thermostat that you might have in your home. But in the back there's a little module, and that little module is a controller that allows us, from the utility, to manage the load within the homes and move it around.

Mr Houghton: In the middle of August the province of Ontario actually peaked again at an all-time high of 25,190 megawatts. Collingwood, in our group, at that point had load management of about five megawatts. Again, to kind of give you an understanding of what that is, it's about 5%. So if the province could do similar efforts at 5%, 10%—and again, all we're controlling right now is water heaters; this technology is for heating and cooling systems—we think there's a significant gain for all of us. We look at this thing as truly being the environmental answer.

We're not here to say that the other alternative fuels aren't the right ones. In fact, they probably are. We haven't looked at them. We're not making comment on them. We're just saying we know that a true way of being able to do this is—when we are peaking, when those fossil fuel plants are being called on, what can we do to manage our loads? It's very simple to do so. Again, we're not inventing the wheel. It's already been invented. We're just utilizing it. We think that it's a wonderful opportunity for Ontario to do this.

Interestingly enough, Minister Wilson knows all about this. He's our local member of provincial Parliament, so we've bent his ear many times. He'd like to be able to implement it, I'm sure. I think if this committee wants to hear us talk about this, and we can actually show you real, live demonstrations—we do it for our board all the time and our council and neighbouring councils—we could probably talk about this for hours. It was pretty difficult for us to give you even a grasp or an understanding of it in 10 minutes. But we think that it is a wonderful opportunity for Ontario to do truly what's right for the province, for the citizens of Ontario and certainly for the environment, for all of us.

We'll be happy to answer questions.

The Chair: Thank you very much. We have about two and a half—maybe we'll let it go a little more. We should start with the government.

Mr Hastings: Thank you for coming, gentlemen. I know as a former Hydro board member in Etobicoke, Ontario Hydro used to be big on demand management and, as you say, it has taken a lower priority. My two questions would be these: (1) what would you figure would be a fairly realistic estimated number of kilowatts saved across the province if you had demand manage-

ment in place in every utility? Second, on a local basis, why isn't the town of Meaford part of your load management operation?

Mr Vaiciunas: I'll answer the second question first. The primary reason the town of Meaford is not part of it is because they are part of Hydro One. At the time, Hydro One was primarily a combined generation and they were interested in selling. They had excess power as far as they were concerned. That would be the prime reason why Meaford was not involved.

Second, in the documentation here you can actually see where some of the utilities in the US have—Florida Power & Light, for example, has 600,000 customers participating in their load management program. Having 600,000 customers gives them 700 megawatts of controllable load. That's a very real number. That's a very significant number.

Mr Houghton: If Collingwood can do 5% just with water heaters—and again, we have a fairly flat load in Collingwood because we have a good industrial base to Collingwood's load. In other areas, that 5% can be parlayed into something significantly higher. But again, if we could do air conditioning load in summer and heating load in winter, we can probably get that up easily to 10%. If we're looking at 24,000 or 25,000 megawatts, that's a significant amount.

Mr Hastings: Does Pennsylvania have load management?

Mr Vaiciunas: Yes, they do.

Mr Hastings: So you can't use the American equivalent of deregulation when we talk about California without including Pennsylvania, where there were hardly any problems in the development—

Mr Vaiciunas: That's correct.

Mr Hastings: —because they planned an adequacy of expansion plus the load demand, right?

Mr Houghton: Absolutely.

Mr Vaiciunas: Oh, yes, they have sufficient capacity for generation. However, they still have issues with requirements. They manage their loads based on peak pricing.

Mr Parsons: What's the reaction of the public? How did you sell it to the public?

Mr Houghton: I can talk about that. We went to the public. At the time, we could benefit the customer. We provided everyone who had a load management system installed on their water heater with $5 per month, which really didn't mean a lot to the utility; it certainly seemed to mean something to the customer. We also had partners, like in Parry Sound and Thornbury, that offered nothing. We showed them how we could offer them system reliability and system security as well as what was right for the overall system, and that actually went quite well. Again, at the beginning we had the odd problem where we might have had hot water turned off at the wrong time, but we've now had six years of experience. We actually look at the demographics of the home; we look at the size of the water heater. To give you an example of that, a 40-gallon water heater with five people in the home is first on, last off, and for somebody like me, who has a 60-gallon water heater with only two of us, it's last on, first off, so that people still have sufficient. It's almost not recognizable by the customer.

Mr Vaiciunas: Actually, when we instituted the program we went after the electric water heater market, of course. In the town of Collingwood we actually have about 80% penetration. So about 80% of the electric water heaters in Collingwood, both owned and rented, have controllers on them.

Mr Parsons: But in this apartment building, you shut the whole 71 down at once.

Mr Vaiciunas: We shut the 71 water heaters off, yes.

Mr Parsons: So if someone is taking a shower at 8, it's going to be 11.

Mr Vaiciunas: Someone taking a shower at 8 already started with a full tank of hot water. They wouldn't even notice.

Mr Parsons: But if you have four teenagers, numbers 3 and 4—

Mr Vaiciunas: If you had four teenagers, we wouldn't have you in that group. We subsegment the water heaters into many different segments and we control them in different resources. In the section here you'll see that I actually did run into problems with shift workers. We didn't realize that when shift workers came home at 9 o'clock at night, that's when they were taking their showers, that's when they were doing their cooking, that's when they were doing everything. We couldn't have them in the control period. We used them only for those other peak periods where it was really required.

1630

Ms Churley: Can you expand a bit on what happened when you spoke to OPG about this in terms of deregulation and possible impacts? I believe you said very quickly that you have had some communication with OPG.

Mr Vaiciunas: With the OEB.

Ms Churley: With the OEB. Can you expand on what you were told about why this can't be taken into consideration? I believe you said there was not enough time.

Mr Vaiciunas: Their primary reason is that they were just too busy trying to get deregulation in place and trying to get the systems in place for the actual market. Actually, in the code it does state that they don't have the time to address this properly and they're going to wait three years before they actually address the issues. Our concern is that three years down the road, everybody who has systems in there is basically going to be starting from scratch. We have to find a way to keep them alive.

Ms Churley: What do you suggest, then, can be done to do that?

Mr Vaiciunas: God, I hate to say form another committee, but I really believe we need to do that. We need to take a few people from the OEB, some people from the Ministry of Energy and some very interested parties and get them to sit down and work out the best way. Credits from generation: a large industrial customer can bid in blocks of load as a sheddable load; a large block of

residential customers doesn't have the same rights. We just need to find a way to address that in our current market structure.

Ms Churley: Thank you for alerting us to this problem. I'm sure we'll be pursuing it.

Mr Gilchrist: Chair, can you indulge—

The Chair: Just let him finish his comment, and then I'll come to you.

Mr Houghton: Sorry. I was going to also add that if in any way that sounded like a criticism of the OEB, it's not. We recognize that they've got the steepest learning curve of anybody, and they've done a wonderful job. We believe the time is now and we should be doing this and we shouldn't be putting these systems on the shelf. If we can articulate this to the OEB and show them that the market was originally set up so that residential customers see price signals—but the reality is that it's going to be a number of years before residential customers will ever be able to see price signals and react to those price signals, shut down their water heater, not do the cooking and the cleaning and those kinds of things during peak times. Because we don't have the proper metering systems in place, it's going to be a long time. We can do this now, because the systems are available now.

The Chair: I'm more than willing to allow some more questions. I know we're over the 20 minutes here, but we're way ahead on the total.

Mr Gilchrist: I have a very quick question. One thing I saw in your report—and forgive me, I've gone through and reread it a couple of times—what was the incentive for the people in Collingwood to sign up, the 80%?

Mr Vaiciunas: We gave them $5 a month. The savings to the utility just on the power bill alone and the savings to Ontario Hydro's pool far surpassed that. We basically split the dollar savings we had from our energy purchases 50-50 with the customers and gave them $5 a month.

Mr Gilchrist: You supplied the controller?

Mr Vaiciunas: We supplied the controller. The other $5 and the savings paid for the installation and set-up of the system and to keep it in place.

Mr Gilchrist: Would the controller control more than one appliance?

Mr Vaiciunas: The controller we put in was specifically for one appliance. Other controllers can come with multiple relays in them so you can control multiple appliances.

Mr Houghton: Up to five or six channels.

Mr O'Toole: It's quite interesting, because my daughter is living in California. She can actually, through her computer at work, turn her air conditioning on. It's amazing. It's all connected through their network.

I just wanted to comment and compliment at the same time. It's not often we hear about controlling the demand line. I've never understood why rates went down the more you used. It's almost a contradiction. It encourages usage, really, or abuse. So I compliment you on that.

I'm interested to know that Floyd Laughren hasn't responded to managing the load, the peak load especially. I fully agree, having sat on the previous select committee on nuclear energy and how they were going to meet these capacity peaks. You're right: once you've got the capacity, you want to sell the product. Which came first? If you've got plants lying idle, it's capital not being fully utilized, so it's kind of a cost-of-capital argument. But I fully agree with you. If there are more examples that you can relentlessly keep us posted on, at any venue, in writing, a format like this and to other members of other caucuses, I think it's an important thing. Really what it does is put the responsibility and the control in the consumer's hands. That's really where it belongs.

Mr Vaiciunas: Absolutely. I agree.

Mr O'Toole: It's for the household to decide to turn the dishwasher on after they go to bed, when the load peak has moved somewhere else. People need to be educated and they're not. But the moment they see their bill—if you use power from 8 until 10, it's going to cost you big dollars; if you use it from midnight until 4 in the morning, it's cheap power—people will start to move their habits around.

Mr Houghton: When they get those price signals they will. That's right, absolutely.

Mr O'Toole: Is that going to be part of the current mandate of the IMO?

Mr Vaiciunas: Part of the problem that we're going to—

Mr O'Toole: No, not the IMO—the energy board. Who is going to educate them?

Mr Houghton: It's actually going to be a combination, MEST and OEB, and we as LDCs need to educate as well.

Mr O'Toole: Good.

The Chair: Thank you very much for your presentation. Even single homes, if there was the encouragement to simply have timers and a decent-sized hot water tank, you would only need to really heat it at night.

Mr Vaiciunas: Timers are not a bad technology; however, we're moving into a very dynamic market where we've actually got hourly fluctuations in pricing and there's no way you can predict when those are going to happen. So if you're trying to react to price signals, a timer is just not going to work.

Mr O'Toole: It's all Floyd's fault.

The Chair: We're meeting him tomorrow. We'll have a little discussion with him.

Thank you very much for coming forward. We appreciate your innovative ideas.

Mr Vaiciunas: Thank you.

COMMITTEE BUSINESS

The Chair: I would like to throw something out for committee consideration. Mr Gilchrist brought forward a motion when we were in Ottawa to be discussed later. I would like to entertain a discussion at this time and possibly save the vote until tomorrow, rather than putting pressure on members to feel that it's necessary to vote right now. But I think it's important—

Mr Gilchrist: Does that mean our next presenter is not here yet?

The Chair: The next presenter is not here; they cancelled. So if the committee would like to do that, we could do it now or we could adjourn and discuss it informally if you're more comfortable that way. I am at your disposal.

Ms Churley: I know the motion was put forward yesterday, but I would prefer to hold off on debating and voting on it until possibly tomorrow. I know we have a really tight schedule, but I need a little bit more time to consider it.

The Chair: What was going through my mind was just having a little discussion now, not necessarily debating it but a discussion so if there are some friendly adjustments, they could be made, and the concerns that some people may have. I compliment Mr Gilchrist for coming forward with some ideas like that. Rather than wait until we get heels dug in later on, if we can discuss our concerns, then maybe he might look at reformulating it.

Mr O'Toole: The proponent may want to speak to it.

Mr Gilchrist: Perhaps I might. First off, one of the options is to make it severable. I think the first challenge we have before us, recognizing the very tight time frame the committee is operating under, is to identify, after hearing from the presenters or as we go along through these presentations, precisely where the expertise lies that the committee should hold further consultations with, and what venues would be appropriate opportunities for us to see the technology in play. When you talk about wind, we only have to go as far as Pickering to see the largest turbine in North America, and undoubtedly we will avail ourselves of that opportunity. But I would submit to you that we need to start working now and we need to set a deadline that is reasonably tight to identify all the likely venues worthy of our attendance. At that point we would be in a better position to plan the logistics and the subsequent events that have to take place prior to our preparing a draft report.

The other motivation behind this motion is that in three weeks the House comes back, at which point all of our schedules become very strained in terms of trying to balance the demands of sitting in the House, and votes, with the work that has to be done on this committee.

1640

I guess the most compelling part is the first part, that research and the clerk compile a list of appropriate venues and circulate that list to committee members for our feedback and further discussion. I have proposed that that list be prepared by September 7. That gives us some wiggle room in terms of then responding and scheduling things before the House comes back on the September 24.

The second general topic in there is the designation of specific technologies to individual members in order that we can multiply our research efforts by a factor of eight and, quite frankly, recognizing that we have set a travel budget that doesn't allow the entire committee to go to every venue to look at every possible technology. It's also not necessary for 14 or 15 of us to all go and look at the same turbine and pick up the same brochure. What is essential, though, is that somebody goes and looks at that turbine and is in a position to comment specifically on what they heard, on what they saw, and the credibility of the technology, in their opinion.

The first issue, I submit to you, is the identification of where it is we need to go or who we have to speak to. The second is to look at the range of technologies. If there is anything missing on that list, I think there, too, if folks could make their comments tomorrow, if not today, that would allow us an opportunity to at least further consider the idea of designating one or more members to specific technologies.

The final point I would make is that I have set a time frame that I thought gave us an opportunity to have a fallback position. I have said "start of constituency week" recognizing that if we don't meet that, at least we still have some time before the first of January, which I seem to recall from our first discussions was the general time frame we had hoped to have our first draft report ready. Then, as you will recall, on the first day we said that after that we would go out to the public for a second round of hearings. Recognizing that we've got that requirement and then a May 1 final deadline, I'm just working backwards from that.

So that was the inspiration for the motion. It's certainly severable. If you like the first part, of at least identifying the "where," that might be something that we could decide today, and the folks back in Toronto in research could start applying themselves to looking up addresses and names of experts on the various technologies.

The Chair: Thank you. I think Mr O'Toole and then Dr Bountrogianni.

Mr O'Toole: Mrs Bountrogianni can go.

Mrs Bountrogianni: Thank you. I do agree with the first part. I don't know if September 7 is possible for research, but I do agree with the first part to give us a start of where we are and then we can each also contribute to that list as well.

I really think November 10 is an untenable deadline. I was planning on using constituency week, for example, or at least a couple of days of that, for visiting some sites. My schedule for the next three weeks is pretty full. If the committee changes—I will do whatever the committee wants, but it would be very difficult at this point for me to change what I had envisioned.

I could be wrong, but I don't see that we have to abide by the November 10 deadline. I understand that things always take longer than you plan, and so being conservative—pardon the term—

Interjections.

Mrs Bountrogianni: I understand that, but I had in mind January-February for travelling, actually, when the House wasn't sitting.

Mr Gilchrist: If I could respond—

Mrs Bountrogianni: Can I just finish?

Mr Gilchrist: Sorry. I thought you had.

Mrs Bountrogianni: I agree with the spirit and with the content of your motion, with the exception of the deadline. I think that is really pushing it, and I'll be honest, with my personal schedule for the next few weeks it would make my life very difficult.

The Chair: There's something we haven't discussed and that's what we're aiming for in the interim report versus a final report, and that may govern some of what Mr Gilchrist is suggesting here. What are we looking for? If we're pushing to get all these visits in before the interim report, what's left for the final report? Maybe the subcommittee should wrestle a bit with what we want for an interim report. Are we going to just fine-tune it for a final report? Are we going to have generalities in the interim? It's something we have not discussed at this point in time. After this discussion we may want to refer to the subcommittee to wrestle this out a little more. But I thought maybe it would be healthy to have a bit of discussion right now.

Mr O'Toole: I really appreciate Steve trying to bring some form—form follows function or something like that. I think, first, that it is expeditious to find some way of agreeing. Specifically, the pressure on someone like Marilyn, where there's only one person, having to have all her time dedicated to following all the technologies is almost impossible. Nothing is impossible, I suppose. I think identifying the technologies you're interested in isn't dismissing yourself from all of the other engaging conversations, by any stretch, or sharing or saying, "I need to know more about...." I think being able to schedule the travel so staff can line up if someone is specifically interested in wind power, which I am—there are three or four examples in my own area. I would disclose a couple: nuclear and wind would probably be my two key ones, and whatever they suggest is the best possible demonstration. I think it's up to staff. I've got no predisposed idea of where that is. I think, part one, I could split it.

Part two would then come back to me. I think the subcommittee is mandated to come up with what the interim report would look like and then go about doing that business. That may mean there may be a different time for travel. Maybe it would be when the House wasn't in session, because I don't know how you can do it, and after September 24 how it's even possible. I wouldn't recommend it. In fact, constituency week—I've got to get re-elected so I'll be in the constituency.

Ms Churley: Is that going in Hansard?

Mr O'Toole: Seriously, I'm saying constituency week is very important for us in rural ridings. These are very important times for agricultural communities. This is when all the meetings are held. They kind of get off the land. They're dealing with the farm support program. It's huge in my riding. I don't have a free night during that week. It's Remembrance Day and all the rest of the stuff. I'm not away.

Clerk of the Committee (Ms Tonia Grannum): We can sit when the House is sitting. We can travel when the House is sitting.

Mr O'Toole: Yes, I agree. If we can just find agreement on people identifying one or two technologies so we can collectively have some further and deeper insights into some areas. That doesn't dismiss us from being interested in all the areas.

The Chair: I think it's starting to fall into place.

Ms Churley: I have concerns that it's going to be a very busy month for me for a number of reasons.

Mr O'Toole: A by-election?

Interjection: Nutrient management.

Ms Churley: Nutrient management and other things as well going on this month. Having said that, I have a couple of other things to say, but I wanted some clarification because I don't have it in front of me about the dates around the mandate. We just raised the possible idea of an interim report, because I view this committee as finding out as much as we can to the extent we can. Most of us, if any of us, aren't engineers or scientists, with the exception of maybe—

Mrs Bountrogianni: Ernie.

Ms Churley: That's right. We're not going to understand in depth any of these technologies, so we certainly need the backup research. We're not going to be able, in such a short period of time, to come back to the Legislature and have a full-blown recommendation of, "This is the energy policy alternative, green policy that we have for the province for the next umpteen years." It's far more complex than that. For instance, I have an interest in, as opposed to the technologies, the conservation efficiency and the economic tools, which I notice is in there now.

Having said that, the other thing I wanted to say—and I know we don't have time to have an argument about this now—is that I don't believe that nuclear and energy from waste should be in here. They are old technologies. Some would argue, in my view, that this committee is about looking at the newer, emerging, cleaner technologies. After having spent years travelling and looking at energy from waste, although there is newer and better emission control technology, I believe those are two that we shouldn't even have in this list, and I want to submit that they should be removed.

1650

The Chair: I think we've had a reasonable discussion. I'm hearing that we provide the staff and put this package together by September 7. The first half of the motion is generally being accepted. There are some concerns as it relates to November 10. So possibly what might be considered—I won't ask to call a vote now; I'm hearing that the researchers may need a little wiggle room there—is that we look at asking for a report from staff somewhere around September 7 and then the subcommittee meet to try and work out the details to flow from there.

Mr Gilchrist: If I may just respond to what I'm taking from the chronology there, I would be reluctant to have the subcommittee wait till September 7, because I will

guarantee you that just means we've lost the rest of September. We couldn't respond reasonably after that and expect people at the other end to clear their schedules for us on short notice. I think the subcommittee has to meet now, in the next day or two, while research is doing their thing, to identify what is reasonable.

I would remind you—and, Marilyn, I am sure you will recall—that on our very first meeting we talked about two rounds of public hearings, the second one to occur after we had made our preliminary decisions and general direction. We have already budgeted for two rounds of advertisements, for example, to tell people about the second. If I have misconstrued something, then this is a good chance we have here today to debate it.

It seemed to me, then, that if you're working backwards from May 1, you have to allow time to reflect on what we have heard at the hearings; before that, to have heard the hearings; before that, to have called for the hearings; and, before that, to have prepared the interim report on which the hearings will take place. If January 1 is overly aggressive and you think we could digest all of those things from February 1 onwards, then January all of a sudden becomes an option.

I'm happy to amend November 10 to anything else—January 1 if you like—but I truly believe that we're going to fall behind the curve here if we don't start as soon as each of our schedules allow, and I appreciate that means different things to different people. At the same time, if the House leaders want to do what is done every day down in Ottawa and guarantee pairing so that we can be away from the Legislature, knowing that, in any vote that takes place, that has not compromised our respective parties' ability to do our respective thing, then that's obviously another wrinkle that we've got to discuss and we need that feedback from our respective House leaders.

I think the concept of at least recognizing that we've got an awful lot to digest in the next few weeks is all that I'm trying to embody in this motion. If changing November 10 to something before the House rises, recognizing that once you get into Christmas and early January it's very difficult to get people back to Toronto, if Ms Churley and Mrs Bountrogianni would be more comfortable with even December 15 as a time frame to have digested the pure research, have all the documentation back in our hands and, if over the Christmas break you want to reflect on everything we've heard in hearings and in site visits, then maybe that still gives us the time to respond.

The Chair: If I can just make a comment, I'd like to call on our researcher for a comment. I'm struggling with the interim report versus the final, what it's going to contain and what the urgency is or isn't. We're almost getting into my dinnertime, and food and I get awful close together, so maybe we can hear from the researcher, and then we might look at possibly over the lunch period tomorrow having the subcommittee meet. I appreciate your comment on having the subcommittee make sure things keep moving, because you're right: if we wait until after the 7th, the following week I'm on the road solid. I'm not sure when the subcommittee would meet. So that's an excellent point. Maybe we can just hear a few comments about putting these reports together. That might be helpful for our deliberations here.

Mr Jerry Richmond: I won't keep the Chair from supper. I act at your behest. I'll just share with you some of my experiences over 20 years around the Leg here, working with other committees, previous energy committees that also did interim reports. I might throw out some timelines but they're not cast in stone.

What I'm hearing during these hearings I think is very positive. We've had some general overview information from the government ministries and departments, and today we're starting to hear from various stakeholders, who I hear putting together suggestions, recommendations, findings. As you know, I am doing a summary. Some of you have probably seen the summaries we've done for thematic committees before. We capture the main findings, recommendations of the witnesses.

I'm still juggling, but I'm seeing general information and then recommendations related to the various forms of alternative energy or fuels. Out of these deliberations this week, when I prepare the summary, what I was sort of thinking of was using that summary, presenting it to you, and that could lead you into an interim report. What I was sort of thinking of—and the time frames aren't carved in stone—was that the committee would probably get an interim report out before Christmas that you could table in the House. You know if you have other timelines, but that was my general thinking from past committees.

I think the summary should provide you some direction. The Chair asked me what's the difference between an interim and a final report. My general thinking is, the interim report would represent the preliminary findings and suggestions in terms of policy direction of the committee. You may in the interim report only identify areas in a preliminary sense that you would want to, say, after Christmas, go into in more detail. That's sort of what's happened before. Committees have acted on that basis.

In terms of the time frames I'm hearing here of members' concerns about other obligations in the House and their ridings. What previous committees did in the past—and I'm not passing judgment—in terms of looking at alternative energy sources, rather than visiting, although you may decide to do some focus visits, was to commission focus studies. What I see as a possibility here is, your basic theme is, what role, what function, future role—whatever—economics, does the range of alternative energy types have for Ontario, whatever you deem those types to be, the dozen or so? Whether you include nuclear or whatever else is entirely up to you.

So what I'm saying is that previous committees, in view of the tight time frame and the other obligations of the members, have commissioned learned studies from experts who have assessed—and the theme here seems to be inside and outside Ontario—who are the leaders and what are the potentials of these various alternative energy sources. You could—my suggestion—commission those studies. If those studies identify to you—let's say Den-

mark is a world leader in windmill technology, and the committee felt it advantageous to visit Denmark; you could conduct a more focused visit. That's my thinking.

In terms of the final report, my general thoughts: the interim report would sort of set the general directions. I think this week of hearings will be valuable once you see the summary. I'm getting some ideas, and certainly I'm open to any suggestions. I think the summary could set you in good stead to prepare an interim report where you could address things in an interim way. If you felt certain technologies merited further study or had further applicability to our province, you could focus in on those and address them in greater detail in the final report.

So those are my thoughts from past experience, but I'm of course open to your direction.

The Chair: Could the committee consider leaving it with the subcommittee for a discussion over the lunch period tomorrow, and then we would address it either late on Wednesday or on Thursday? Probably if we address it late on Thursday, we'll make a decision quite quickly.

Mr Hastings: That would be fine, Mr Chairman, if the members' views are taken into account. I want to reiterate my disappointment somewhat in that what I see occurring is that essentially we're going to have a select committee in its traditionalist mode in dealing with the issues, whatever technology or however you deal with the interim report. It is not going to engage people as it ought to.

I think the Web site ought to be a much more key, central provider of access to information, because you've got lots of people who aren't going to come to this kind of a committee because of a whole set of constraints on their time. That is my key concern that I raise.

The second one: what should be in an interim report? I think Jerry's got a good handle on that, but I think it should also deal with the economic and financial or fiscal side of these technologies, because we're getting groups presenting, they're putting their best foot forth, which is what they are required to do, but we need more specific economics of these. Maybe that's where the special studies might come into play in what you would have as your content of an interim report. Those are my primary considerations.

The Chair: Thanks very much, Mr Hastings.

There's something that we haven't discussed at all, and that's meeting on a reasonably regular basis during the fall term, possibly a weekly basis, when we can invite in various delegations to look at in depth and some activities. We may want to go out to the marketing—I don't have the right terminology—IMO out in Mississauga. That's something we could do some morning when the Legislature is sitting.

So, with your indulgence, I would like to adjourn for dinner.

Mr Gilchrist: Recess.

The Chair: Recess. We're adjourned from Ottawa, but we're recessing for dinner and we'll reconvene at 6 o'clock sharp. Thank you very much.

The committee recessed from 1701 to 1758.

CANADIAN WIND ENERGY ASSOCIATION

The Chair: I call the committee to order. Our first presenter for the evening is Zephyr North and Canadian Wind Energy Association, Jim Salmon. Please state your name.

Mr Jim Salmon: My name is Jim Salmon. I'm representing the Canadian Wind Energy Association. Mr Galt, Ms Grannum and committee members, thank you very much for inviting me here tonight.

I'm going to speak quickly because I'm going to try to give you two little talks. I apologize to the people here who have to crane their necks.

My talk is about wind energy, and it's based mainly on this document recently produced by the Canadian Wind Energy Association, of which, I should point out, I'm the past president. It's called Wind Vision for Canada. It's using Canada's wind energy potential, which we believe is 10,000 megawatts of installed wind capacity by the year 2010, and that's called "10 by 10."

Let's get some background about wind energy. It's the fastest-growing source of electrical energy in the world. Its five-year sustained growth rate is 32%. It's a $7.5-billion industry—that's Canadian dollars. It grew from 13.5 to 17.7 megawatts in the year 2000. The Ontario grid capacity is about 23,000 megawatts, so at the end of this year or next year it will surpass the capacity of the Ontario grid. Ontario currently has 0.6 megawatts of wind capacity. That will quadruple to 2.4 megawatts tomorrow in Pickering.

Why would wind energy be interested in Ontario, and why should Ontario be interested in wind energy? The investment in wind energy represents a huge opportunity. It's a huge growth industry. It is the most cost-effective source of new energy in some jurisdictions. When you count environmental externalities, it's probably the most cost-effective in just about every jurisdiction. I think it's worth comparing it to the oil sands.

If Ontario embraces wind energy and an industry is created, it will create thousands of jobs. It will limit the emission of air and water pollutants. There are a lot of electricity-generating sources that cause problems for the water supply and, as we all know, that's beginning to become problematic in Canada and elsewhere, as well as greenhouse gases.

There will be a concurrent reduction in health costs if those things happen. It will secure an abundant source of green power for Ontario and Canada and it will ensure against electricity price spikes. Once you've paid for your wind turbine, you've paid all the costs except maintenance, and it's pretty well known what that cost is.

What's the cost of inaction? Essentially, it's the loss of being in the market, of being part of this explosive growth of electricity generation.

Who in the world is participating? Shell certainly is. Shell predicts that 50% of world energy—wind energy; sorry, I should have made that clear—will be sustainable energy by 2050. BP thinks the same thing and says that loudly. The European Union expects 22% of its elec-

tricity to be renewable by 2010, and most of that will be wind energy. In the US they expect to have 5,300 megawatts of wind energy by the end of this year. That's happening in the Midwest, Texas, California and New York. There are a lot of states where wind energy is starting to take off.

In Denmark, 17% of electrical energy is already supplied by wind energy and up to about 75% in some of their jurisdictions. There really are no major problems with that; obviously there will always be problems with any energy generation source. One of their problems is that they've too much wind energy some of the time and they export that; they sell it.

Companies getting interested in wind energy or companies which are actually already investing in wind energy in Canada are Suncor Energy, Ontario Power Generation, Shell, TransAlta, Enbridge, Enron, BC Hydro, most provincial utilities—Hydro-Québec should be added to that—just about all the major energy players. I don't think Imperial Oil will ever be interested.

CanWEA's goal of wind vision for Canada is, as I said, to install 10,000 megawatts of wind power capacity by 2010; that's "10 by 10." That would be 5% of Canada's electricity. That 10,000 number didn't come out of the air; it came out of the electricity table of the climate change implementation tables—I forget the exact name. In that table they did a lot of modelling, a lot of study, a lot of research and they discovered that if the price of gas were to go up—and remember they were doing this two years ago—that 10,000 megawatts of wind energy would be the most cost-effective way of meeting Canada's Kyoto commitment. As we know, the price of gas has gone up.

What are the benefits to Ontario? These are the benefits to Canada if we install 10,000 megawatts of wind power: $10 billion to $20 billion of economic activity. I should note that if Ontario pursues wind energy, if Ontario makes it attractive for wind energy to happen here, my guess is that half of these benefits would accrue to Ontario; if Ontario aggressively pursues wind energy, I would say well more than a half. So $10 billion to $20 billion of economic activity; aid to 160,000 high-quality jobs—these are good, well-paying high-tech jobs; a contribution to clean air, and human health benefits that come from that; a reduction of 15 million to 25 million metric tonnes of greenhouse gas emissions; and 30 million megawatt hours per year of renewable energy at a stable price. So no Californias; no Albertas.

What can Ontario policymakers do to help make this happen? It falls under three categories, and there are a lot of specific things that can be done.

One is to ensure non-discriminatory electricity market access. I would point out some things that are happening in Ontario now. The Ontario emissions trading regulations which recently have been published are problematic. They don't allow clean energy to participate in that emissions reduction market. There is no incentive whatsoever for wind energy to be in that market, to produce clean energy. The environmental assessment regulations which are now on the environmental registry penalize wind energy too. They make it harder for wind energy to pass an assessment, and it's mainly in terms of quantities.

Market stimulation: we really need some sort of early-stage incentives. None of our electricity sources made it on their own. If you look at the example of nuclear energy, it certainly didn't get here because people wanted nuclear energy and the commercial nuclear energy market put it there. Wind energy, renewable energies, would like to see early-stage incentives. These are such as production incentives, consumer credits, RPS standards, which you may have heard of; if not, you will later on this week. These have proven very effective in the US. There's a great, long list of other ways to promote sustainable energy. These are a few that we think will work in Ontario and in Canada. And leading through example: Ontario could buy sustainable energy, renewable energy. That would be one way.

There is a page in that document which you all have—I'm not going to go through all of this—that's a pretty succinct summary of what government, mainly, and industry can do here to promote wind energy. A careful reading of this would allow you to—well, you can read this and then decide which of these Ontario might be able to support.

This is the end of this part of my talk. What's the prize in this? The prize is that Ontario would participate and it could gain leadership in a huge global industry. Again I point to the oil sands. It was something the promoters had to get into at the beginning. They had to take their losses at the beginning; they had to make it happen. They did make it happen, and now they've got the prize, which is billions of dollars. The prize here is the same. There are leaders in wind energy. They are Denmark, Germany, the United States to some extent, but in North America there is only one company that makes wind turbines: Enron in California. Ontario has the opportunity. Ontario is the place that it can happen. Ontario has the industrial background; Ontario can have a domestic market. It's got the people with the skills to do it. It just has to want to do it. And there are all of those other benefits which I had mentioned before.

That's the first quick half of my talk. When I give talks about wind energy, which I frequently do, I always get the same questions, so I'm putting up the list here and I'd like to know if you would like me to answer any of these questions.

Mr Jerry Ouellette: All of them. Number 4.

Mr Salmon: Number 4? I'm going to answer number 1, "Is there any wind resource in Ontario?" whether you want me to or not.

Ms Churley: I do.

Mr Salmon: OK, good.

The Chair: They tell me there's a lot around Queen's Park.

Ms Churley: Speak for yourself.

Mr Salmon: Let me do number 1. There has been a limited study of the southwestern part of Ontario, and this is part of the results here. Those lines that show "6.0"

there, that's six-metres-per-second wind speed at 30 metres above the ground. That's a pretty decent wind resource, and it happens around the lakes.

The Chair: Could you help me just for a second, in metres per second equalling miles per hour? Have you got a conversion at any point?

Mr Salmon: I think it's 2.2, so that would be—what?—15.

The Chair: Thank you. That's helpful.

1810

Mr Peters: Could you provide us with a copy of that?

Mr Salmon: Yes, I can.

There's another map. That map was derived from wind speeds measured at Meteorological Service of Canada stations at points throughout the province. This one is a derived map done by, again, the Meteorological Service of Canada at their computing facility, the same facility that does the weather forecasts. This is a different model from the weather forecasts, which they've used and run over four years of forecast data, essentially the same model as input to this model, which then calculates the wind energy statistics. That scale up the side shows that the reddish numbers are better than the blue numbers.

If you look at Alberta, this is where all the activity is happening here in Canada. It's this light blue colour. In Ontario there's a fair amount—as a matter of fact, there seems to be more light blue than there is in Alberta. So again, this is driving activity in Alberta. There's lots of light blue, and that light blue should actually extend a little on to the shorelines, wherever it's on the lakes. This scale, by the way, is watts per square metre, which is a way of measuring wind energy, which I will explain to you if you want.

Interjection.

Mr Salmon: OK. I've just blown up that map. It's pretty chunky, but you can see that within the southern part of Ontario there's lots of opportunity for wind. Wind energy requires three things, among others: it requires wind, land to put your wind turbines on, unless you go offshore—let's not talk about that—and it requires a market. Southern Ontario has all of those. It's in a terrific position, I think.

Look up along Hudson Bay and you can see offshore of the bay that there's a good resource, but it's offshore. Nobody is going to build a wind turbine in the middle of Hudson Bay, and even if they do, the market is so limited that there's no point in doing that, and it's a lot better on the Quebec side than on the Ontario side.

Just to show that I'm not making this up, this is a map produced in the United States, essentially in support of their wind energy programs. Like all US maps, it stops right at the border, but you can see that all around the lakes it's dark blue—on this map dark blue is good—and that extends to the other side of the lakes. By implication, you can see that that is going on.

One question that often comes up is, why does it take so much area? I won't answer that one, because nobody asked me to, but I will put up this one slide. That's a big red dot over Queen's Park—

Mr O'Toole: It should be blue.

Mr Salmon: The colours are not significant. That is the amount of land that is taken out of previous use. For example, if you put wind turbines on a farm, it would take some of that farmland out of use; you couldn't use it for farming. But you can use the land all around wind turbines. Animals are not afraid of them. They don't have any problems with them. It takes no time at all for them to get used to them. They don't even notice them. When they do notice them, they come up and scratch on them. That's what they like about them.

That's the amount of land you would have to take out of permanent agricultural use, for example, to produce the same amount of energy as a 540-megawatt nuclear plant.

Mr O'Toole: That's the same amount of land that a nuclear plant takes.

Mr Salmon: It's close. I do the same calculation there. I have a lot of numbers here. See now, this way I suck you into answering that question.

Mr Gilchrist: Is it too soon to make a recommendation that we clear that very land?

Mr Salmon: I did this calculation because people always ask this question. It's on the next page. Here, if you look at point of interest number 7, the amount of land the Bruce nuclear station takes up is the amount of land that would be required to support 6,480 wind turbines, which is about six 540-megawatt nuclear reactors. I think there are eight at Bruce.

But again, just so it's clear to you, this is not the total amount of land these turbines would sit on; this is the amount of land they would take away from other use.

Mr Gilchrist: What would the cost be for 6,480 turbines?

The Chair: Maybe we'll let him finish his presentation.

Mr Salmon: A lot. And you wanted number 4, which was?

Mr Jerry Ouellette: Noise.

Mr Salmon: Noise. This is a graph of the noise that a typical wind turbine makes. It's the solid line there. All these other dots are background noise in a typical urban or rural setting, although not many turbines are in urban settings.

You can see what happens. The turbine doesn't really operate until about this speed here, so it's noiseless up to here because it's not running. So this is the background noise. When a turbine starts, the noise level is here, which is just about the same as the background noise level. This is the noise of leaves and bushes and stuff being blown around.

Once the wind speed goes up, the background noise level goes up much faster than the turbine noise level, and that's typical of just about any place you might put a turbine.

Mr O'Toole: Why is that? Does it magnify it or reflect it, or what?

Mr Salmon: The noise that you get from leaves and bushes adds together as the wind speed gets higher and

gets louder, whereas the turbine noise is aerodynamic noise, unless there are a whole lot of wind turbines there. There is no opportunity for it to magnify itself. That's my simplistic explanation of that.

The Chair: Maybe we'll let you go ahead with your presentation. You have about three minutes left, so I don't want to interrupt too much.

Mr Salmon: Basically, the point here is that the House of Lords in England did a study on wind energy, and their results were that, thanks to improvements in technology, noise is no longer the issue it once was. That was their conclusion on noise.

I think that's about it. This is the existing wind turbine in Ontario, right there. That's the one at the Bruce nuclear plant. It's a Tacke wind turbine, 600 kilowatts. These are pictures of wind farms. Not too jammed together, as some of them are in California, which were badly designed.

That's it.

Mr O'Toole: What about the—

The Chair: Just a minute. We're really out of time. Maybe 30 seconds from each party for a comment. Official opposition, any comments?

Mr Parsons: Is there such a thing as a wind turbine that, rather than the blades, is a vertical screw? Someone told me that, and I've not actually seen one—

Mr Salmon: Yes, there is.

Mr Parsons: Kind of an Archimedes—

Mr Salmon: As a matter of fact, Canada used to be the world leader in the design of those turbines, but they never received any promotion or support. There is one company in Calgary which has certified one of those wind turbines, but other than that, I am not aware of any that are commercially available. But there have been lots of examples. There's one huge one in Quebec.

Ms Churley: No time, but I understand that OPG is able to use the emissions trading credits for the turbine they're putting up in Toronto. On the other hand, you said that wind turbines can't be, under the existing laws, part of the—sorry, I feel so rushed, I'm not being articulate—

Mr Salmon: No, I think I understand what you mean.

Ms Churley: —part of the emissions trading.

Mr Salmon: OPG can use it because they can offset it against their emissions.

Ms Churley: Exactly.

Mr Salmon: I can't use it. I can't put in a wind turbine and use it, because I have no emissions.

Ms Churley: OK.

Mr Jerry Ouellette: What's the smallest size available? Are there ones available for a household that you can implement on an old TV tower, things along those lines, or not?

Mr Salmon: Yes.

Mr Jerry Ouellette: There is? So what size and what kind of production capacity?

Mr Salmon: A typical house, you'd want a wind turbine which is about a kilowatt in size, so the blades would be about six feet in diameter. You might want something a little stronger than a TV tower to put it on, and I would highly recommend not attaching it to your house.

The Chair: Thank you very much for your presentation. From the enthusiasm, I think you had better stand by for recall. We may be calling you back, because there's a lot of enthusiasm. Probably the committee will be meeting during the fall and may want to invite you back.

Mr Salmon: Sure. Thank you very much.

The Chair: Thank you very much for an excellent presentation.

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ARISE TECHNOLOGIES CORP

The Chair: We move on now to ARISE Technologies Corp, Michael Ben and Ian MacLellan. Welcome. Just state both your names for the sake of Hansard.

Mr Ian MacLellan: I'm Ian MacLellan. I'm the president and CEO of ARISE Technologies. Michael Ben is our chief financial officer. First of all, thank you very much. My expectation was to give a crisp 10-minute presentation to give lots of opportunity for questions, so I would like to get right into this.

What I thought we would do is give a very brief introduction to ARISE, talk a bit about an overview of solar energy, give a couple of international examples of what's going on and talk about the opportunities for Ontario and some specific recommendations for the committee. What I have also enclosed in a handout is a copy of the slides and three interesting articles from the most recent issue of Renewable Energy. That gives a lot of the more detailed data for you to take a look at.

First of all, solar energy is very complementary with wind. Typically you get more solar energy in the summertime and you get more wind energy in the wintertime. They work very nicely.

There are basically five different types of solar energy that I would like to just touch on. What has captured the attention and interest of most people is solar electricity, where we are generating electricity directly from the sun. This is the type of technology that has been used in satellites for many years. Solar thermal uses the sun's energy to heat up, typically, water or some heat fluid. Passive solar is a building envelope-type design where you're making the building more user-friendly with the sun to capture energy. Natural daylighting is using natural daylight to reduce—right now we're using electrical energy to light this room, but it's sunny outside. If you design the building to use more natural daylighting it's actually more comfortable. Natural cooling is a building technique to use solar energy to actually cool the building.

ARISE Technologies is predominantly a research company, although we do have revenue. This is the home I live in. This is probably considered by many people in Canada to be the most advanced solar home in Canada. We're using all five types of solar energy in the home to

dramatically reduce the amount of energy used. The middle part is five kilowatts of grid-connected photovoltaics, or solar electricity. On a sunny day we're generating more electricity than we use in the home, and we're feeding that energy back into the electrical grid and our electrical meter runs backwards.

We're using solar thermal on either side. It's hard to tell from this picture, but we're heating up water and we're providing all of the pool heating. This summer our pool was typically around 85 degrees—just right. We're also using it to preheat our domestic hot water and to preheat space heating. This summer I think I'm the only one who's talking about having an excess harvest. The farmers certainly aren't. We actually turned off our gas backup for hot water and were on 100% solar hot water while having a very comfortable pool. Also we used some passive solar, with all the south-facing windows. The clear storey at the top lets a lot of natural daylight into the space and the greenhouse acts as a chimney for the solar cooling. We had no mechanical air conditioning in the house and the house was very comfortable.

With that project, we were invited by the Canadian government to represent Canada at the International Energy Agency's task 28 on sustainable solar housing.

Very briefly, what are the characteristics of solar? First of all, it's very environmental. It's considered the best environmental technology by some people. It's very modular. It can be very small. We have a small solar energy system in the corner. We sell these all over the world. It's a self-contained solar energy system you could take with you up to your cottage, or we can provide for a complete house. You could do an entire city, put solar anywhere. That's one of the key characteristics. Also it can be very discreet. At BCIT they have solar windows. They look like regular tinted windows but they are actually generating electricity. We're putting them into the building skin. In Europe they're replacing granite in high-end buildings. With solar panels it's actually less expensive than the granite, and you don't get a lot of electricity out of granite. The technology is extremely robust. It's the most robust technology there is for generating electricity and roof maintenance. Part of the reason for that is that it was originally developed for outer space. It is also located at the point of use and can be integrated into the building, as I showed in the picture of my house. The solar panels are the roof on my house. It also keeps the rain and the snow out.

The solar electricity can be connected up to the grid or it can be used for off-grid applications. When it's connected to the grid it acts like a negative load. Think of it like a dryer, but it doesn't consume electricity; it generates electricity, so to the house it looks like a negative load. It is as easy to hook up as it is to hook up a dryer.

One of the characteristics is that you are prepaying for 50 or 100 years' worth of energy up front, so once you pay for it, you don't have an ongoing investment. With most conventional energy you pay a little bit for the furnace and then you keep on paying, and that's the difference. It's also in phase with peak demand. When we see the really hot days and it's in the paper, that's when we're generating the most solar electricity. One of the key attributes is that we typically generate electricity when the prices are highest. For example, we have some data that in Alberta last year the average price of electricity was about 10 cents a kilowatt hour, but the solar-rated value of electricity generated feeding back into the grid was twice that. Also, the solar electricity adds capacity to the grid. What's happening in a lot of major metropolitan areas in the United States is that they're actually adding solar at the point of use. That's the only way they can add capacity, because they can't run bigger wires to the office buildings.

In summary on solar, one of the really key benefits is that it's the best environmental technology: we're allowing consumers to harvest free energy from the sun.

Shell Solar—if you go to the Web site there's a big ad on Shell. By the way, BP Solar has a big ad in here too.

I tried to figure out how we can explain how much energy we get from the sun. If you take all of the fossil fuels we have consumed in the history of mankind and then take all the reserves of fossil fuels that we know about, we get that same amount of energy from the sun in 20 days. If we can just harvest that energy, it's a no-brainer. That is one of the key things about solar.

We also like to take credit for wind because solar causes wind energy. We're very pro-wind, but that's just another form of solar. It also improves the robustness of supply. We're seeing this at first hand in California: by adding solar, it's adding capacity. It's also extremely easy to deploy. We can literally deploy solar energy on a house in one day. In California they have crews go out and do two houses a day, and those installations supply virtually all the energy for those houses.

Some international examples: please take a look at the materials, because solar is happening in a big way. The Japan market is probably the most exciting. In 1993 they did the first 10 homes in Japan. Last year they did 20,000. Experts are saying we're about a year away from a self-sustaining market. They had a large government subsidy that they've reduced every year. Next year the subsidy goes away. Right now they have a small subsidy. We think we're about a year away from a mainstream market in Japan.

Germany had another exciting stimulus program where they actually paid a premium for solar electricity on a kilowatt hour. That stimulated that market.

In the United States, California had a 50% buy-down program. There's information in that package that tells you more about it. The on-grid, grid-tied systems are where the highest growth is.

Opportunities for Ontario—economic: we're going to create jobs. I know a little bit about creating jobs. My prior background was in venture capital. I created several hundred jobs in BC. I decided to return to Ontario and do the same here. What we know from wind and solar and other renewable technologies is that we typically, for a dollar input, produce five times as many jobs as com-

pared to coal or nuclear. It's also going to create exports and reduce imports.

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It's also an environmental technology. We estimate that we are going to reduce greenhouse gas emissions by 20 tonnes a year in my home, on my house. Also, in terms of reliability, there are concerns about deregulation in Ontario based upon some of the poor planning in California, and solar energy will help improve the robustness of the grid.

Recommendations: we need to formalize simple grid connection in the regulations for small renewable generation. We have a very progressive utility in Waterloo North Hydro that has allowed us to do this for their education. It's very easy to do this. This has been done in tens of thousands of homes on a worldwide basis. We just need to get with the program and implement simple regulations to remove the barriers.

There is net metering legislation in 35 states today and in several countries—Japan, Germany, most of Europe, the Unites States—and you can get more information if you go that Web site. Because solar is a premium value commodity, we need to provide an optional peak and off-peak rate so you can get the true value of solar that is available to the homeowners.

We need to remove potential utility opposition. We have a very progressive utility in Waterloo. Other utilities are not as progressive. We need to complete deregulation. Solar works in both areas. We don't need deregulation, but just to make a decision and complete it. We need to train electrical safety inspectors. We have professional engineers in our company. We've sat down with electrical inspection. They passed it; we explained it. All that has been taken care of.

The second part of our recommendations is to provide incentives. I'm not here to say to do this one or that one, but here are a number of incentives that will help to accelerate local industry. That could be interest deductibility on solar products or even on the whole home. If you produce a low-energy home or a no-energy home, can you deduct the interest costs on that? In BC there's no PST today for solar energy products. Let's do that at least in Ontario, and you talk to the federal government about the GST thing.

Buy-down programs similar to what they did in California; high purchase rates similar what they did in Germany. Flow-through shares could be a very practical way to stimulate investment in small companies like ours. We've done that in the oil and gas and mining industry. Let's mine the sky. Other shareholder investment incentives similar to what they've done with labour-sponsored funds; and expand university research. I know a number of really good professors. There's a lot of gold in universities. We have strong relationships with several of the universities.

In summary, solar is going to become a mainstream technology. It's happening now, with or without Ontario. But what we have is an opportunity to be the Canadian leader and leverage off our historical manufacturing and export strengths. With this technology, one of the fundamental shifts is that we're going to go away from extracting things out of the ground to manufacturing equipment to harvest free energy from the sun and the wind. Or we can just ignore it and continue to import the technology. We import most of the products; we're doing some manufacturing. We also have an opportunity to export: 75% of our sales today are exported into the United States, mostly into California. I like California. Utilities are going to have a more robust and lower-cost grid. One of the reasons why we're able to sell net metering with Waterloo North Hydro is because I showed them that my sending electricity back into the grid would actually improve their profits.

We have an environmental issue today. Solar is the best environmental technology. This is how our planet works. If we didn't have the sun, we wouldn't have our lives. We've done some proprietary market research with the executive program at Wilfrid Laurier, plus stuff out of the United States. All things being the same, consumers' number one choice is solar. We did a focus group with these MBA students. They asked people, saw the public, "List all the forms of energy." They listed all the forms of energy. "Tell us what are the pros and cons of all those forms of energy." Solar was the only technology that did not have an inherent negative problem with the technology. So I think it's important to listen to the consumers, listen to the marketplace, listen to constituents and give them what they want.

The last slide has our coordinates. I won't put that up. If you need to contact us, we're going to be updating our Web site shortly on the ARISE side. On our SolarSense.com, which is our retail Internet store, you can shop for some solar products. We take Visa and MasterCard.

The Chair: Thank you very much for your presentation. We have about a minute left for each of the caucuses.

Mr Gilchrist: I guess cost is the issue. Very briefly, give us an idea of the installation costs. We just heard from a wind generator what the cost would be to have one house converted. What would it cost to put solar in?

Mr MacLellan: Unfortunately, it's a very broad answer. Michael, who is our chief financial officer, can maybe give a slightly more concise answer than I would.

Mr Michael Ben: How much solar do you want? If you have a roof on a home, it's just completely up to the economics. A one-kilowatt system is going to be $10,000 to $12,000. That home was five kilowatts of photovoltaics, and that would be about $50,000. You typically wouldn't go much beyond that five kilowatts. That's the largest in Canada to this date. There are a few homes in the States with over 10 kilowatts, but not very many.

Mr Gilchrist: Does that include the battery storage component as well?

Mr Ben: The batteries are not an expensive component of it. The key thing there is that he has no battery. His battery is Ontario Hydro. He just sends his excess back. It's an on-grid system. What he is going to install

for the security, a big selling feature, is that you can have it so that you have a battery bank where you save it and then the excess goes off to the grid. That's just because we've tested our internal inverter, which doesn't have that capability, which it will shortly.

Mrs Bountrogianni: This is heartening for me, coming from a solar country originally. But if you ask most citizens on the street about solar energy, they would say that it wouldn't be worth it in Canada because of our climate. Could you disprove that, that there's enough sun and this would be worth it?

Mr MacLellan: Yes. For example, there's a home in Maine, which is actually slightly north of where I live. We get more solar energy here; we get more solar energy than in a lot of places in Europe. So it works, actually, quite well. When I've talked to people on the street, we've had very positive response from neighbours, and we've had a number of television interviews and newspaper articles. What we're seeing is that there is a strong interest in solar. All you have to do is come over to our house. You're all welcome. In fact, come for a swim. People touch the pipes, and they're hot. They see the electrical meter running backwards, and it works. A friend of mine who is a world expert in solar—Time magazine referred to him as one of the heroes of the planet—likes to close his presentations by saying, "If it exists, it must be possible." It exists here in Ontario. It must be possible.

The Chair: I'd just love to see my meter running backwards.

Ms Churley: You gave a series of recommendations, but what would be the key recommendation for this committee to bring back to the Legislature to get this industry off the ground—I suppose you'd say it is off the ground, but to make it more popular and people more aware of it and willing to try it?

Mr MacLellan: I think the most important thing right now is to remove the lack of net metering rules in Ontario. We're really behind. Net metering first happened in the early 1980s in Massachusetts. That's the number one thing that I'd ask for.

I think the second thing would be to find some way to stimulate the industry, just level the playing field. You've stimulated the nuclear industry, as mentioned earlier. Hibernia got a $1-billion grant. Just find some way to level the playing field and let private enterprise create the jobs. I know how to create jobs; I've done it before. Just make it easy for me.

The Chair: Thank you very much for an intriguing presentation. You may have to be on recall too, from the enthusiasm here. Thanks very much for coming out.

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VESTAS CANADIAN WIND TECHNOLOGY INC

The Chair: Our next presenter is Philipp Andres, sales director for Vestas Canadian Wind Technology.

Mr Philipp Andres: It will take me a minute here to set up.

The Chair: If anyone in the audience has some special needs for a presentation, just speak to Tonia Grannum, who is over here in the grey suit, and she'll help you out.

Mr Andres: I don't need a mike.

The Chair: You need a mike for Hansard because it's all being recorded. Sorry about that. We can hear you, but there's an ulterior motive for having the mike on. You can read all about it in Hansard later. All set to go?

Mr Andres: We'll just let it warm up here for a second and then, yes. Can people see this alright?

The Chair: Just fine.

Mr Andres: My name is Philipp Andres. I'm sales director for Vestas American Wind Technology. I have been in the wind energy business for the past 11 years. I started out in 1992, worked for two manufacturers, one a German company, and established a rotor blade manufacturing facility near London, Ontario, which is still running and operating today. The company was later bought out, and then I switched to a Danish manufacturer—Vestas is in Denmark—to their North American subsidiary, Vestas American Wind Technology. Just recently we formed a Canadian subsidiary called Vestas Canadian Wind Technology, and I'm also the sales director for that company—for both companies, actually.

My office is up in Kincardine, the energy capital of Ontario, near the Bruce nuclear power development. I put up a wind generator right next to the visitors' centre back in 1995. That was done in collaboration with Ontario Hydro and Natural Resources Canada at the time. That generator has been running very successfully for six years.

I'm going to structure the presentation in three segments. First, I'll give you a quick overview of wind energy worldwide, then how Canada is faring, and Ontario specifically in the context, and then the required market rules for renewables in Ontario in order for our industry to have a fair chance in a deregulated market.

This shows you just an overview of what has been installed worldwide to date. It's more than 18,000 megawatts, and the lion's share of that has been installed in Europe, more than 13,000 megawatts in Europe, of which almost 4,000 were installed in the year 2000.

The next largest share is in the Americas, with almost 3,000 megawatts installed by the end of 2000. In the year 2000, 180 megawatts were installed, of which our company installed about 50%.

In terms of wind power development, we are no longer a fringe industry worldwide. We are a mainstream business and we've been growing at compound rates of between 30% and 40% annually. As you can see, this is the graph showing from 1990 up to 2000. We now have annual growth of more than 4,000 megawatts and that is projected to climb to over 10,000 megawatts for the entire industry by the year 2005, over the next four years. You can also see how it is split up again in a graph form.

You will get all of this. I will put it on a CD ROM, saving some paper. I have made one copy of it. There are more copies being done right now. I had some trouble with the photocopier at my office, so I apologize for that.

This shows you the value in US dollars, and that is actually in millions of dollars. They should put a comma in there. That slide was done in Europe. By the year 2005, the market is expected to grow to over $32 billion a year. In our company alone right now, for 2001, we are anticipating that we will have a turnover of about C$1.8 billion worldwide. Again, this is cumulative wind power capacity, up to 140,000 megawatts by 2010, which is very significant growth. Actually, 1999 was the first year when the wind energy capacity installed for the year exceeded the nuclear energy capacity that was installed the same year. That means on an annual basis.

This shows you a little bit again how it's split up between countries. We are looking now at a fairly substantial amount of energy being produced from wind energy, more than 37,000 terawatt hours per year in 2001.

I'm going to quickly slide through this. I just thought those slides would be helpful for you afterwards to put our industry into context. I'm not going to elaborate on all of them.

Our technology has also had a lot to do with why wind power has taken off. We are now very cost-competitive in good, windy areas, and this shows you the development of the price of energy on a per-kilowatt-hour basis in US dollars. It was at 16 cents a kilowatt hour in 1980 and it's now about two and a half cents US in the United States at good, windy locations. Mind you, that still has some tax incentives associated with it, and the rates we are seeing in power purchase agreements are reflecting that somewhat as well.

That also shows you, obviously, that the higher the average wind speed is on a site, the lower the cost. If you have an average of, let's say, six metres per second, you would find that the cost would be about five and a half cents US per kilowatt hour. It keeps on going down as your wind speeds increase, so location is very important.

What does the future hold? We think we can reduce our cost of energy by another 10% to 15% over the next three years. Actually, over the last three years it was 10% to 15% and we expect another 10% over the next two years. As I indicated before, currently PPAs are being signed in the United States, in the Pacific northwest and in Texas for two and a half cents a kilowatt hour or less.

Also, we feel that the emission reduction credit market will further evolve, both on the domestic and international fronts, and will be driven both by local pollution concerns and by international greenhouse concerns for CO_2 and other greenhouse gases.

Wind energy will form a much larger part of energy supply in the future and, once the switch has been made to a hydrogen economy, will also then become a major source of energy for the transportation sector.

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How do other countries support wind energy? As an example, Denmark currently produces 13% of its electricity demand from wind energy and that is scheduled to go up to 50% by the year 2030. They will install more than 4,000 megawatts of new generation capacity offshore. It's a country with a population of only five million or six million people, so we could compare Denmark to Ontario. That puts it into context a little bit.

We have many more incentives in the United States than we currently have in Canada. Ontario is not alone in that it doesn't have any incentives; the rest of Canada doesn't have any either. We have a 1.7-cents-per-kilowatt-hour production tax credit in the United States which you can use against taxes payable, so primarily the investors in the wind business are large utilities and their unregulated utility subsidiaries. They have really been driving the price down as well by purchasing very large quantities. As an example, we have one customer out of Florida which has purchased almost 900 machines from us for installation this year alone.

You can go through this at your leisure. That shows you what incentives are in place in different countries. I'm not going to elaborate much more on that because I know I only have a limited amount of time to talk and I want to get to some of the recommendations afterwards as well.

The future for wind power in Canada: Canada has an excellent wind resource. I would say that within continental North America we probably have the best wind resource. That, coupled with a large consumer base and the land available to place these wind farms, I would say we are really destined to become the largest market for wind energy equipment in the world over the next five years.

If we were to follow the lead of what CanWEA is proposing right now, 10,000 megawatts by 2010, it would result in very substantial investment in Canada. I wasn't here for Jim's presentation; have you concentrated on that quite a bit? You probably have heard about this already. If we as a company have a local market where we can install 100 to 150 megawatts a year, then we will start establishing local manufacturing. We do a full technology transfer at that point in time. That's what we're in the process of doing right now in the United States. It will likely be in the Pacific northwest because that's where a very substantial market is developing. As an example, the federal utility BPA has announced an RFP for a thousand megawatts all on their own, and there are many different RFPs coming out in the Pacific northwest; also down in Texas.

Texas has an RPS—that's a renewable portfolio standard—in place of 2,000 megawatts. In terms of the implementation of that, the 2,000 megawatts was supposed to be installed by 2009, but it's already way ahead of schedule and almost half of that capacity will be installed in the first year of its existence. In reality, the premiums which consumers would have to pay, or the rate impact of that renewable portfolio standard, is actually negligible because the price of natural gas has gone up, so it might actually decrease the system's overall marginal costs by implementing an RPS.

What is the potential in Ontario itself? Ontario has a landscape very comparable to northern Germany, northern Europe; relatively flat in southwestern Ontario and eastern Ontario. Some 3,000 to 4,000 megawatts is not a big deal to install. The turbines are getting larger; we have taller hub height and larger technology. Our company just installed in Pickering a wind generator of 1.8 megawatts in size on a 78-metre-hub-height tower. I would encourage anybody who travels on the 401 to drive past it and take a look. The inauguration of that machine is going to be on Wednesday, tomorrow. My understanding is that Elizabeth Witmer and some other ministers are going to be present at the site.

We also have a large customer base in Ontario. We have a customer base which is, in my belief at least, educated in environmental issues. I think the consumer wants to have the choice of being able to go out there and buy green energy, and it is very important that we are not erecting new market barriers but that we are taking market barriers down and making sure that we are operating on a level playing field and also that actually renewables should be the preferred choice of generation because of the positive environmental attributes we have at the same time.

As I indicated in my lead-in, there's already plenty of practical experience here in Ontario. Modern technology has been running here for more than six years. There definitely is a wind resource here. Wind resource assessments have been done since 1992, and my colleague Jim Salmon has done some of the studies for my company as far back as 1992. So the wind resource is well documented and we feel that that is not really the problem, that there wouldn't be any wind. The primary issue here was that there was really no policy support in place which would have given us a level playing field versus nuclear and some of the other generation technologies which are more mainstream.

If we were to install 1,000 megawatts of wind energy capacity, that is with a 1.8-megawatt machine and only 556 turbines. That's not all that much. When I put that into context, we have 70,000 transmission towers in this province, and the population wouldn't think that we are totally cluttered with transmission towers. So 500 or 600 machines would disappear in the landscape, and that's 1,000 megawatts. So to go to a target of 3,000 or 4,000 megawatts could give us a very substantial boost in terms of dealing with nitrogen oxides and sulphur dioxides. As an example, the effect of 1,000 megawatts of installed capacity, with very average capacity factors calculated in, conservatively we would be looking at more than nine kilotons of nitrogen oxides and more than 32 kilotons of sulphur dioxide which would be avoided with that type of installation. So we can make a substantial impact. If you go up to 3,000 or 4,000 megawatts, the impact is much more dramatic.

I'm going to flip through this very quickly and get to the recommendations. That just shows you a little bit about our company. That will also be on the slides. We now have an overall annual production capacity between the group of companies of 4,300 megawatts. That is, in total, more than the installed capacity right now at Pickering and more than what it is at Darlington. This is on an annual basis, so this is very substantial manufacturing capacity and we're increasing that by about 30% per year every year.

That just shows you a few pictures, that this is a high-tech industry. That shows you the installation of one of the wind turbines. This is actually a project down in New York state, southeast of Buffalo. If it works down there, it should definitely work up here. It's a project with 10 660-kilowatt turbines. That's the finished project, and there are another six turbines farther to the north.

This is the turbine we just installed in Pickering. You can see the nuclear station beside it. This is a pretty large machine. The rotor diameter on this turbine is 80 metres. Here's another view of it. This shows the development over time and that is indicative of the industry as a whole. We started out small, 55-kilowatt equipment, gained our experience, learned from our mistakes, and progressively have gone up to larger turbines. Larger turbines are utilizing the space more efficiently; you need fewer of them. When you're looking at a visual impact, you cannot distinguish from a distance whether it's a large turbine or a smaller turbine; you can just see the number of turbines which are installed. So larger turbines also have a positive effect from a visual perspective, other than just increasing the amount of energy you can harvest from a specific location.

What are the options we have available in Ontario? We believe that a comprehensive policy approach is required, and when I'm talking here I'm also putting on my IPPSO hat a little bit. I'm the chair of the environment committee for IPPSO and I'm on the board of directors as well, so I'll refer to it. Some of it is IPPSO's position and some of it is our own company position. But it is also IPPSO's position that we should have a comprehensive policy approach to make sure that renewables are not forgotten in the deregulated marketplace.

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The Chair: You have about two minutes left.

Mr Andres: OK. I'm going to hustle through it.

The available options include a renewable portfolio standard. The emission cap and trade system that has been proposed: we just, today or yesterday, have submitted our comments from IPPSO on that. We were very happy to see that the ministry has taken at least part of our recommendations to implement a set-aside for renewables and energy conservation on the NO_x and SO_2, but the percentages were wrong, and we need to definitely get those increased. My recommendations are in there.

What is the rationale for policy intervention? The spot market, which invariably is setting the price in a deregulated marketplace, favours low capital cost-high variable cost generation options, because that way in pretty well all markets the fuel costs are passed directly through to the spot market—that's why you have all the variations in it—so that's where the market gravitates to. It's pri-

marily natural gas in terms of new energy capacity or production capacity being installed. That is not all bad, I'm not saying that it is necessarily bad, but we need more options than just natural gas if we want to have a vibrant electricity market in Ontario, so we want to make sure the high capital cost, upfront capital cost generation options, but which have a very low variable cost, are not forgotten in the process. They're very hard to finance unless you have long-term power purchase agreements in place, and that is—what California found out—if you are at 58% natural gas for your generation capacity, you're going to be suffering from price volatility if the gas is in high demand. We want to make sure that we are maintaining our independence by having a variation of generation options available. That's why renewables require a little bit of a push, because they have a high upfront capital cost, but the operating costs are low.

Obviously, one other thing is that polluting the environment when you are producing electricity is not a right. It should be the principle of polluter-pay in the process, and it has to be valued somehow. So if I go on the system with clean energy, I should get some benefit from the fact that I'm avoiding pollution rather than producing it.

The renewable portfolio standard is the single best mechanism to achieve a meaningful amount of new renewables to come on the system after deregulation has taken place and the market opens up. It has no, or a negligible, effect on consumer prices worked in conjunction with other policy measures such as emission cap and trade and tax credits, and guarantees the resource diversification on fuel price risk mitigation and allows for accelerated reduction in emissions, as I've shown to you in that other graph which showed the emissions avoided.

The Chair: You're well over the 20 minutes. So wind it up, please.

Mr Andres: OK. An RPS document drafted for Ontario will be provided to the ministry and also to the select committee by IPPSO and the wind power task force prior to the end of September this year.

The only other thing I wanted to show you here in terms of the emission cap and trade recommendations: right now in there it's one kiloton which has been proposed as a set-aside for renewables, both for NO_x and SO_2, and that's including energy conservation. We're proposing at least 5%, and that will be 1.8 kilotons for NO_x and 7.9 kilotons SO_2 in 2002, and for that then to be ratcheted up.

The Chair: Thank you very much. I think we're going to have to move on. It's obvious in some of the areas of technology we're going to have to have a recall and get further into the details.

Mr Andres: All right. What I also did for you was to give you a copy of a summary of the state incentives in the United States. It shows you for each and every state what kinds of incentives they have in place for wind energy.

The Chair: Thank you.

ACROLAB LTD

The Chair: Our next presenter, Acrolab Ltd, Marvin Shaw, research and development; and Joseph Ouellette, president. Joseph, you just may find a long-lost relative here at the table.

Mr Joseph Ouellette: Is there a Ouellette here?

Mr Jerry Ouellette: Bonjour, monsieur. Ça va ?

Mr Joseph Ouellette: Can you hear me?

The Chair: You will need the mike for Hansard purposes. We hear you but that doesn't mean they will hear it for Hansard purposes. You'll be able to read about yourself in Hansard later.

Mr Joseph Ouellette: That's good.

While we're setting up, I'll give you a little use of the time here.

Acrolab is a group of companies that operates worldwide and has manufacturing plants both in Canada and Poland. We manufacture heat transfer equipment specifically for the industrial and aerospace industries. Our customers include NASA—we have launched equipment on the space shuttle—General Motors, DaimlerChrysler, Ford Motor, Hewlett-Packard, Sikorski Aircraft, Boeing.

We do a lot of work in the industrial arena with respect to transferring energy rapidly. The product we use to do that is referred to by the trade name Isobar. It is a superthermal conductor. In an environment like this it's extremely difficult to demonstrate it. It is a relatively demonstrable piece of technology but we would need some apparatus to do that, so we didn't bring it with us. Time is limited and we respect that. For that reason, I'm going to ask you to take on faith some of the information I'm going to give you tonight.

The product transfers energy approximately 20,000 times the speed of a solid copper bar of the same geometry as the device that we're going to be discussing. It is not only superthermal, it is super-distributive. By that I mean that energy is transferred immediately from one end of the device to the other, but simultaneously the device produces an isothermal or exact uniformity of energy from end to end.

Agrilab is a company within the Acrolab group. Agrilab was developed to take advantage of a circumstance and an application that had been about three years in research and development, and that was the development of alternative fuel sources and heat transfer systems for the agricultural and agribusiness in Ontario, Canada and North America.

Bear with us just a moment. We'll get this show-and-tell on the road.

The Chair: Maybe with new technology the problems we have—it used to be just a carousel of slides and you dropped them in.

Mr Joseph Ouellette: I used to give these with carousels of slides years ago. Now we've gotten more into computers and we're slowing down.

Agrilab, in the Acrolab group of companies, is located in Windsor, Ontario. As I said earlier, we also have a plant in a city in Poland known as Lublin. We supply

both the eastern and western European markets with our products out of Lublin, Poland.

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Due to our location in Windsor, Ontario, we understand quite well the frustrations and concerns of the greenhouse farmer who has suffered greatly at the hands of oscillating fossil fuel prices over the last winter, although this year there seems to be some relief. The latest publication is that fossil fuel prices and natural gas prices have dropped an astounding 75%. I'm not quite sure what the dynamic is that causes that to happen, but I'm quite surprised. Even though the 75% reduction is in place, the curve with respect to the cost of fossil fuels, and natural gas in particular, is always up. We will never pay less in the long term for the energy we're getting.

We're on.

Agrilab develops, designs, manufactures and markets heat transfer solutions to the rural and agribusiness customer. It is part of the group of Acrolab companies. Acrolab has approximately six corporations in the group. We were established in 1948 and we are a world leader in heat transfer technology industrially. We do business in 27 different countries.

We're going to talk about the regional justification for Agrilab and for alternative fuels within the context of the greenhouse industry in southwestern Ontario, and we'll make specific reference to Essex county, our home.

Ontario produces more than half the greenhouse vegetables produced in Canada, with an annual farm gate value of $275 million. Essex county has 1,000 acres of greenhouses, with an estimated property value in excess of $300 million.

Canada's greenhouse vegetable industry produces 17,000 Canadian jobs and is a $3-billion industry in economic activity, with a $1-billion investment in leading-edge agricultural technology—significant numbers.

Skyrocketing fossil fuel costs: the cost of heating a greenhouse structure has increased from 200% to 300% in the recent past. I refer specifically to last winter. For the economic survival of the industry, alternatives to natural gas energy must be found.

Agrilab's alternative fuel heating system: let me give you some sense of this. Natural gas is a fossil fuel. Agrilab deals with fuels before they become fossilized. Agrilab deals with the use of biomass materials that have yet to decompose, solidify and become coal, oil and natural gas. Agrilab uses biomass in a unique way. The typical biomass solution is to burn it. Wood chips, sawdust, ground-up pellets, tree waste, vegetable waste and plant waste are tossed into an incinerator and burned at high temperatures in order to acquire thermal energy or, as a by-product, through additional processing, electrical energy.

What Agrilab does is take advantage of the energy associated with the decomposition of biomass materials. Energy lost through rapid energy conversion of biomass materials is in the range of 60% to 80%—free gases gone, unable to be used for anything of any value. Biomass produces, in its decomposition cycle, energy that can be captured at the rate of 90% to 95%. Agrilab's technology is, first of all, to potentiate the biomass decomposition cycle and, secondly, to extract the energy associated with that process and move it into the greenhouse, the agricultural outbuilding, the farmer's home and buildings that are in a generally rural environment at this point in time.

The methodology: I spoke earlier about the idea that we're dealing with energy due to the decomposition of materials. We also use the Isobar superthermal conductor in order to remove the energy from the biomass during its decomposition cycle so that we can extract that energy without dealing with the natural process that occurs on the forest floor, but it has within it some concerns about various other gas-generating processes such as minor amounts of methane and ammonia and things of that nature.

We are able to move the energy in a sterile environment to the point where energy produced and decomposing biomass can be directed immediately into a sterile operating theatre without any fear of contamination.

Heat generation: the average decomposition period for a biomass is approximately 42 days. That is a growth-and-decay cycle that begins at room temperature and climbs to approximately 140 degrees Fahrenheit, sustains itself at approximately 140 degrees Fahrenheit for a period of two to three weeks and then decays down to a temperature of approximately 90 to 100 degrees Fahrenheit. You'll excuse the use of Fahrenheit, but, frankly, it has a larger number of intergraduations within the temperature range we work in so we elect to use Fahrenheit as opposed to centigrade. The idea is that a natural decomposition period of 42 days generates energy in the range of 140 degrees Fahrenheit for approximately a two- to three-week period during that decomposition cycle.

Agrilab has extended this decomposition period to 150 days, while sustaining a temperature range of 135 to 140 degrees Fahrenheit. What is extremely important here is that temperature can be sustained in a cubic metre of biomass material while energy is being extracted from it, making it possible to heat a greenhouse complex for an entire winter from the decomposition of one biomass pile.

Maximizing biomass performance: as I said, nature does a marvelous job of decomposing materials that are plant waste. It happens on the forest floor; it happens in your backyard. Your grass clippings decompose; energy is generated. If you bundle up all your grass clippings, put them in a black plastic garbage bag, put it out on the lawn to be taken away and put your hand back into the garbage bag the next day, you'll find it's 135 to 140 degrees Fahrenheit within the bag. Nature does a lovely job of it. We know that by taking predictable biomass materials, blending them with natural cultures—essentially catalysts—ensuring that there are appropriate and controlled amounts of oxygen and water, that we can sustain the energy that is produced naturally over an extended period of time while sustaining a temperature

range, again, of 135 to 140 degrees Fahrenheit while a demand is being placed on the system.

As I mentioned, biomass can be developed in specific materials. An example of that: sweet corn silage, which is a cattle feed at the present time and is available in range of $10 a tonne, can be purchased, brought in, have a catalyst provided to it—which is really nothing other than a natural culture of either poultry, swine, horse or cattle manure, and frankly the proportions of that are very small—and by blending in those catalysts we can generate powerful amounts of energy over long sustained periods of time with no odour control necessary and with no methane or ammonia generation of any significant account.

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This is a strange-looking greenhouse. In fact, it is a research apparatus. It will never see the light of day as a commercial greenhouse, but it is an example of how we developed the data necessary for us to commercialize this technology. This is in fact two concrete, poured-in-place pits approximately 18 feet long, eight feet wide and six feet deep. A greenhouse structure exists over one and a biomass pit exists in the other. Approximately six tonnes of sweet corn silage and 400 pounds of horse manure are in place in this pit. This pit, by the way, exists less than 300 metres from a high-density housing complex. Nobody even knows it is functional. There is no odour. You cannot detect anything happening in this construction, nothing whatsoever.

This device has been generating, through its biomass decomposition, 140 degrees Fahrenheit for 145 days. It has been transferring energy from its biomass into the greenhouse through a plenum at the base of the pit so that the greenhouse has sustained a minimum of 65 degrees Fahrenheit, at least in environments that have been in the range of 30 degrees to 28 degrees Fahrenheit during the evenings.

There is no electrical connection to that greenhouse. There is no need for any electrical power within this structure. What you see here is the biomass pit before it had been loaded with biomass and these copper bars are in fact superthermal conductors that we refer to as isobars. They were in place before a top-off of six inches of highly conductive concrete was poured in place. So the base of the biomass pit has imbedded in it 20 of these superthermal conductors that transfer the energy generated by the biomass across a party wall and into the greenhouse proper. This is six tonnes of sweet corn silage blended with approximately 400 pounds of horse manure, as you can see, full right up to the top. By the time we're finished, we're going to reduce that in mass 10 to 1 and we're going to produce potting soil.

There is no energy loss other than the energy transferred into the greenhouse itself. The efficiency is in the range of 85% to 90%. There is no electrical connection to this system whatsoever. There are no greenhouse gases produced by this system. What we have done in this instance is taken a marginal crop and converted it into five months of usable fuel that will ultimately generate a saleable product in humus and potting soil.

Process integration and distribution of the heat energy: in this particular research apparatus that we were discussing earlier, we transferred the energy directly into air at the bottom of the greenhouse pit. You can see here the other side—this is the party wall between the two pits. These are the evaporator or condenser sections of the superthermal conductors that we're using here—the isobars. They're located at the bottom of the plenum, approximately 18 inches above the floor of the plenum and before a whole matrix of concrete block has been placed between them so that we can ultimately create a floor five feet above this structure or array of condensers, so that air has free passage through the plenum.

During the day, the temperature in the greenhouse, due to the sun, the passive solar effect, is in excess of the temperature in the plenum. In the evening, when the solar energy is no longer available, the greenhouse rapidly becomes somewhat cooler than the plenum itself. At that point in time, natural convection occurs and the warm air at the bottom of the plenum rises and presents itself to the greenhouse and the plants, where it cools and, becoming more dense, settles down back into the plenum, where it is reheated by these condenser sections and a natural convection cycle maintains temperature at 60 to 65, 70 degrees Fahrenheit in a circumstance where a 30-degree-Fahrenheit outside temperature exists.

The Chair: Unfortunately, you're over time, but I'll give you another couple of minutes to tidy up, wind up there.

Mr Joseph Ouellette: Environmentally positive: this system uses nothing but natural materials. Natural decomposition process: there is nothing irregular or unusual or forced about this process. We optimize the natural process merely by ensuring that the appropriate amounts of moisture, decomposition material and oxygen are present—no fossil-fuel emissions whatsoever—and the material that we use is reduced in size by 10 times its volume and we reuse waste material.

An interesting point: a 10-acre hydroponic greenhouse that produces tomatoes 50 weeks a year generates an astounding 25,000 pounds of plant waste every week. We take that 25,000 pounds, allow the farmer to not have to deal with tipping fees in a landfill, redirect that landfill material into a system that generates heat for his process by circulating hot water through a system as opposed to using air—I won't go into the technology; I think it's evident within the brochure—and at the same time give him a saleable product in potting soil that he either puts upon the other acreage that he has within his farm or sells on a commercial basis. There's a $500,000 annual cost to heat 10 acres. Agrilab's heating system can reduce dependency on these fossil fuels by 50% to 70% and provide a return on investment in the range of two to three growing seasons.

The Chair: If you could just wind up.

Mr Joseph Ouellette: That's it. I'm not going to give you any more. It's all in the brochure. Should you require more information, we're at your disposal any time.

The Chair: I did stretch the time because it's such an intriguing presentation and very different from anything we've received so far. Thank you ever so kindly for coming—excellent information.

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AUTOMATION TOOLING SYSTEMS INC

The Chair: Our next presenter is ATS, Automation Tooling Systems, Milfred Hammerbacher, vice-president of solar division.

Mr Milfred Hammerbacher: I saw earlier how we kind of struggle with this transition, so I had this thing lit up and ready to plug in, and as I set it on here, what happens? The screen goes black. So we'll see what happens here. And the screen is black there too.

The Chair: Maybe it's waiting for some solar energy.

Mr Hammerbacher: I think that's what it is.

You have the presentation in front of you so I'll just get my copy and we'll go through it, and if this ever comes on, fine.

The Chair: We can certainly follow along with the slides.

Mr Hammerbacher: Yes. My name is Milfred Hammerbacher. I'm with ATS. I'll just give you a brief background of myself before we start. I have actually been in the solar industry for a little over 14 years. I started at Texas Instruments on a solar program there. In the last four and a half years I've been working with ATS, Automation Tooling Systems, managing various segments of their solar businesses.

This evening I'll just touch briefly on the background of ATS and then I'd like to hopefully answer a few questions: why should we be interested in solar as part of a sustainable energy plan and how can the Ontario government participate in making this a successful industry for Ontario?

Following along here, ATS is headquartered in Cambridge, Ontario. We have a little more than 3,700 employees worldwide right now. We are traded on the Toronto Stock Exchange. The company's principle business is automation. We build turnkey automated manufacturing lines for a lot of Fortune 500 companies in a very diverse market: automotive, pharmaceutical, semiconductor, consumer products and solar.

ATS also has a pretty good global presence for a company its size. We have companies in the US, Europe and Asia, but by far the largest segment of our business is in Ontario.

The solar activities of ATS really started back in 1992 when ATS was the lead equipment integrator for Texas Instruments on a research project that Texas Instruments was developing at that time. In 1997, ATS purchased Photowatt International, which is a French solar cell manufacturing company, and in 1998 we had the opportunity to buy the Spheral Solar technology that Texas Instruments had developed. Since 1997, ATS has invested over US$60 million in solar activities. It's still a relatively small segment of our business but it's something that the company feels very strongly about and is continuing to invest serious dollars in.

Photowatt International, as I said, is a French-based company based in Bourgoin-Jallieu, France. It has been around for over 20 years. It is one of the first solar companies in existence, actually. Today it's the seventh largest manufacturer in the world. When we purchased the company they were producing about two megawatts per year of solar panels and this year we'll produce about 18 megawatts. So we've gone through a very rapid expansion of our business in France and right now we're in the decision process of bringing that over the ocean and putting in a manufacturing facility here, hopefully in Canada and hopefully in Ontario.

The customer base for Photowatt is also global. We have a large clientele in Germany. The US is a big market for us and a lot of the francophone countries in Africa and the Caribbean are also major customers of Photowatt today.

We brought with us a panel. I know my colleague Ian MacLellan showed you a panel earlier. This is one of the products we manufacture in France today. This would produce about 50 watts of electricity.

We are also working toward the future and we feel like Spheral Solar technology is the technology that can really make a breakthrough in this industry. I'm going to have Nathalie pass around some samples. It's always easier to feel than to talk about. Basically this is a technology composed of thousands of tiny silicon spheres. Each sphere is actually a solar cell. Those spheres are bonded into an aluminum foil, and a few other processes, and they are made into a solar cell. The solar cell is flexible; it doesn't break. This was developed in Texas. I have to add that it's bulletproof as well. It's important in Texas that you have a bulletproof product.

Why are we so excited about the technology? Really, the number one reason is the cost. With this technology we feel we can achieve under five cents a kilowatt hour of electricity cost, which puts us in very good competition with a lot of conventional forms of electricity generation. That's been one of the major knocks against solar for so long, that it's too expensive: why should we invest in something when we get something else at a lower cost? We think this is going to solve that problem.

The cost is important, but also flexibility plays a big role in this as well. The material can be flexed. It can be made in any size or shape. We have a prototype of a roof tile. This is a Spanish roof tile. These solar cells can be wrapped over the tile. Architects really like this technology in that they finally have a technology that they can design buildings with, rather than slapping something like this on to a building. There's not a whole lot you can do from an architectural design standpoint.

The flexibility also lends itself to other building material, sidings and that sort of thing, as well as the automotive market. Right now the automotive market is going through some major transitions. Hybrid cars are starting to become popular, and by putting a couple of these panels on the roof of a car that conform with the

curvature of the car, you can have another form of a hybrid vehicle.

Why solar? Why should anyone be interested in solar? I've listed here a few of the attributes. The obvious one is that it's inexhaustible, clean energy. As long as we've got a sun, we have solar energy. That's an important fact as we go to the future.

It's a very reliable technology. There are no moving parts. As I said, Photowatt has been in business for 20 years. We have product that's still in the field in Africa in some hostile environments that's still functioning well. This is a really positive feature for something, especially if you're going to incorporate it into a building that's expected to last for many years to come.

It's also an unobtrusive technology. There are billions of square metres of building surfaces out there today that are basically wasted that we can deploy this technology on and not really negatively impact the environment.

It also helps solve transmission grid problems in that you have a distributed power source; you put the power generation where the power is used. Those two factors, the non-obtrusive part and the fact that it helps solve transmission problems, are very important today. Everyone is aware of the energy crisis that occurred in California and that's still there. There were many factors that created that crisis, but one that may rank high up there is the not-in-my-backyard syndrome. For 10 years the citizens of California refused to allow any power plants to be built in the state, they did not allow any transmission lines to be erected in the state, and here they have a problem where they don't have enough electricity. Here's a real challenge: how do you get electricity to these people? People are making statements. They want a clean environment to live in. They don't want to breathe fumes. They don't want something ugly in their backyard. How do you get electricity to them? We think solar is an outstanding opportunity to solve that problem. Today California is an exploding market for us. We cannot supply enough of this product into that market today.

Then again, with new technologies like the Spheral Solar technology, we also think we will be cost competitive with other forms of energy generation. With all those together, we feel solar has to be a component of any kind of sustainable energy plan. I do not say it's the only thing and I won't knock any other renewable energy technology. I think it's going to require a lot of different technologies to bring us energy in the future.

I'm sure if you've done some background research you've seen a lot of market projections. The market has been really quite good for the industry the last few years and many experts predict this market will continue to increase over the upcoming years.

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The market forecast I have here is by Bank Sarasin, one of the large banks in Switzerland. They have a renewable energy portfolio so they've studied the markets quite well and they're projecting quite impressive market growth.

The drivers for this market are also very strong. They're not drivers that are here today and gone tomorrow. Global climate change, environmental concerns, economic impact, the energy shortages in California—all these things are driving our market growth today and we feel strongly will continue to do that into the future.

Why should the provincial government participate in this partnership with the private sector? Good question. Why should you? Why not let the industry do it alone or let someone else do it? I've got a few things for that argument.

I really think this is a rare opportunity to take a leadership role in a new high-growth industry. There are many experts out there today who say that solar energy, solar electricity is going to be the next semiconductor industry, and that comparison goes a little bit further. They say that if you compare the age of the solar industry today with that of the semiconductor, we're at right about the point of the semiconductor industry in the early 1960s. What does that mean? To me that means that the fun and the excitement of our industry is just beginning. There's a great future ahead of us in this industry.

Royal Dutch Shell has done a study and they're projecting that by the middle of this century the largest energy component will be solar. This is an oil company projecting this, OK? This is something that people are taking notice of. You've got countries like Japan and Germany that have said, "Hey, we want to be the home of the next Silicon Valley." They've taken aggressive programs to try to make that happen and I have to tell you today, they've been very successful. If you look at where the market is for solar, where the new companies are being formed, who are the big players in solar, we feel kind of alone here in Canada with our operation, because Japan and Germany are really driving the growth in our industry today.

You also have the opportunity to leverage large investments from the private sector and from the Canadian federal government. Just to take ATS investment plans alone, we intend to invest a little over $100 million in finishing the development of the Spheral Solar program. I forgot to mention earlier—it was on the slide—that part of the development we have left with this is that we have a joint development with Alcan. Alcan is going to be developing the aluminum part of this for us and they're playing a big role in developing that technology in Kingston. We intend to invest $100 million in this development and then after it's commercialized, over the next 10 years, we see at least $1 billion of further investment in equipment and new manufacturing facilities.

Then we look at the federal government. The federal government has several programs that are very active in supporting technology development and technology deployment in solar energy. Industry Canada has the TPC program; we've got CIDA that's very active in solar now; and there's a TEAM fund that's being funded through NRCan. All those funds are being directed at several types of renewable but solar is very popular to a

lot of these programs and you have the opportunity to attract those federal dollars into Ontario.

Providing a cleaner environment: I think that's pretty obvious. This technology has no emissions. I've put together just a few numbers here. This is just from our plans for expansion of Spheral Solar. By the year 2030, we would reduce greenhouse gas emission by 150 million tonnes. This can go a long way toward meeting some of the action plans for environmental climate change in the government.

Another factor that's kind of overlooked: burning fossil fuels creates pollution, but another environmental crisis occurs a lot of times in the transportation of energy. You have crises or catastrophes like the Exxon Valdez, last year the TotalFina oil tanker that crashed off the coast of France. These things also have big impacts on the environment. Solar is the ideal technology for exporting energy. It can be transported with a lot less risk.

The next slide kind of dramatizes our technology here. One barrel of silicon spheres has the energy equivalent, over its lifetime, of 14,000 barrels of oil. So if you have to have a shipwreck on your coast, which would you rather have left on your coast, a barrel of spheres or the oil? It's very nice technology for exporting, and we're really seeing the application of our business is a large export business for Ontario.

Another reason to consider this is that the core industry is already set up here in Ontario. There are several companies that are involved in solar energy, from our standpoint in developing new technologies and manufacturing solar panels, to companies like Ian MacLellan's that put together the systems. You have Alcan, that's supplying components, and they're also interested in the building façade side of the business, aluminum siding, incorporating solar cells. So we've already got a core to start here. You don't have to start from scratch.

How can the Ontario government participate in this exciting opportunity? There are many ways for the government to contribute. Some cost money and some don't. In the areas of not costing money, there are lots of regulations and legislation that could be enacted that could really help benefit solar. One thing that's absolutely critical is a net-metering law. Is anyone familiar with the net-metering laws? It's absolutely critical for any kind of distributed energy source, be it solar fuel cells, small wind, whatever; you've got to have that in place in order to make it economical for a consumer to use this product.

New building construction codes as well: Canada is already well known for designing some of the best energy-efficient buildings in the world. It's an export market force, actually. Changing some of the regulations, requiring buildings to be even more efficient or perhaps generate some of their own electricity, could also go a long way in supporting our industry.

Leading by example: there are many applications where the government could use solar today in their buildings and other institutions.

Risk share technology development: this is a really strong way to not only attract businesses for their energy, but also for their jobs. If you develop the technology in Ontario, then the jobs will stay in Ontario in the manufacturing area. There are several ways to do this. I'm not going to tell you anything that's new here. All of these initiatives have been tried in other places in the world. One advantage you have is you can go out there and see what has worked and what hasn't. But to just summarize some of these things, refundable tax credits, loan guarantees, joint developments with universities—all those are good ways to support technology development. Providing financial incentives for the end users is also another way that has been used successfully in several areas in Japan and Germany, either by buying down the cost of a system that the user might put on their roof or providing low-interest loans or tax credits for using this technology, or in some cases it has been successful to use favourable pricing. For anyone who has a solar system on their roof, the utility is required to buy that electricity at a favourable price to help support the industry. That's a very successful technique being used in Germany today.

I would like to finish by saying I've been a team-builder for all of my career and I strongly feel like putting together teams is the best way to tackle any problem. I feel like a partnership between the private sector and the public sector is absolutely critical to make any of these new technologies successful. I think we have a real opportunity here.

The Chair: Thank you very much. We're over time. My apologies that time has run out. It was a very intriguing presentation this evening. Thank you kindly for coming forward.

Mr Hammerbacher: I apologize for my high-tech computer.

The Chair: We'll get back to those carousels yet.

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JOHN VAN DER VEEN

The Chair: Our next presenter is John van der Veen. We have 15 minutes for you.

Mr John van der Veen: I am very short-winded. I don't need 15 minutes, I believe.

Has everyone received my letter for today?

The Chair: It has been circulated.

Mr van der Veen: My name is John van der Veen. I am a retired economist who worked for the federal government for many years. I worked several years, as a matter of fact, in alternative fuels for transportation. I am now a full-time farmer down in Elgin county; in Port Stanley, to be exact. Steve Peters over there is my honourable MPP. What else can I say? I have been interested in alternative fuels for a long time. I'm also a Dutchman, by the way, so this is why I have this great interest in wind power and in windmills. I'm not interested tonight, though, in really discussing the pros and cons of windmills, or even more high-powered ones,

because I understand there are all kinds of experts around and basically the only thing that mainly should interest you is that the cost of wind power right now at Lake Erie is down to roughly 10 cents a kilowatt, which is just about marginally profitable.

As I said, I wrote you this letter. I'm interested in establishing a six-megawatt wind farm on the north shore of Lake Erie on land that I presently own. I own roughly a kilometre-long beachfront. They say that a minimum size for taking into full account economies of scale is 10 megawatts, but to remain conservative and to reflect trial aspects, six megawatts is enough for what I want to do.

Such an undertaking involves roughly C$8 million and would on average serve approximately 3,000 homes or their equivalent. It would entail probably—and I say "probably" because the technology is rapidly changing every day, practically speaking—six windmills of 900 kilowatts each. I would want to try three of them onshore and three of them just offshore. The wind patterns are such that you can optimize the wind power by putting three of them, in this case, about 100 metres offshore.

My letter to you initially made four points. The first one was that if producers of non-wind energy were to be held financially responsible for the pollution their processes produce, as they should be if you want perfect competition, their cost per unit of energy would be no lower than those of strategically placed wind farms right now.

Second, even now, with competing coal-burning products on the market for electricity production, the selling price that ensues therefrom is such that wind farms are marginally profitable, as I said, if we can get from Ontario Power Generation roughly 10 cents a kilowatt hour.

Third, marginal profitability is not good enough at this point in time; it never will be, I presume, unless the costs come down even more. Right now the price is such that the banks and other investors are not even remotely interested. It's just too high risk. Therefore, that's why I'm here: basically to speak about the last point, which is what can governments do if they wish to bring wind power to the fore much more quickly than the market will eventually do?

I suggest that on a trial basis—and this is very short—if you consider that there is not only an interest for wind power but for other projects as well that are sort of marginally profitable, you consider giving a loan for an appreciable portion—say, 75%, 100% or so—of the $8 million required, that the yearly interest thereon would be a market rate of roughly 8% but that the payments of interest be equal to the yearly net income exclusive of that interest on that project. In other words, this is really quite simple: you charge the 8% on the loan, but you don't require me to pay that full 8% if in fact I don't make the money, excluding that payment. Is that clear? Does that make sense?

Mr O'Toole: That's what Ontario Hydro had during nuclear.

Mr van der Veen: Is that what they had?

Mr O'Toole: Yes.

Mr van der Veen: Well, that's what I want.

If it's a good wind year, for example, if the prices go up and if there's a lot of wind—because there is variability from year to year in the amount of wind in any particular location—then I would pay the 8%, plus whatever the net income is excluding that interest. In other words, the full amount of the net income would go to the government, either as a payment on that interest or as a reduction of the principal. Then, I'm saying, at the end of 20 years, if there is any principal left outstanding with that deal, then you forgive that remaining amount, if there is any such remaining amount. I think by considering that mechanism, you would be expediting wind power substantially, as much as you've expedited the workings of Ontario Power Generation, as Mr O'Toole just finished saying. Any questions?

The Chair: We have about a minute and a half per caucus, starting with the government side.

Mr O'Toole: I want to be on the record as supporting wind power provided the source is appropriate. But I want to correct the record too. I think Ontario Hydro, under the Power Corporation Act, had what they call SDR, strategic debt retirement, which required them to pay back a certain amount of the debt each year as a percentage of the cost on the full charge of a kilowatt, at about six cents.

When they were building nuclear, which was designed on a mortgage of about 20 years, in one of the footnotes in their financial statements, in about 1994, they changed the amortization period from 20 years to 40 years. That is the life of a plant. Guess what it did to the debt? It lowered the mortgage payment over 40 years. So that's how it was handled. It was very high finance, and it ended up with a lot of stranded debt.

Wind power comes out at about nine cents a kilowatt. That's what we were told during all the hearings—

Mr van der Veen: It depends on location.

Mr O'Toole: —during competition hearings, during the deregulation discussions about Ontario Hydro when they formed OPG and Hydro One. My question to you is, how much capital does it take to really generate—of this $8 million, is that all just capital infrastructure?

Mr van der Veen: That's all.

Mr O'Toole: It doesn't include the land or—

Mr van der Veen: It would be 10 cents at this location. This location is not optimum in Ontario. It's very good, but it's not optimum. I think as a matter of fact Kincardine might have a slightly better location, although it has never been fully tested. There have been all kinds of tests but not fully tested. I'm assuming it's roughly 10 cents a kilowatt right now, with the present technology. What was your question?

Mr O'Toole: The $8 million, did that include the land or just the infrastructure?

Mr van der Veen: Just the actual machines.

The Chair: We'll move over to the official opposition.

Mr Peters: Just a couple of observations on John's proposal here. I think one of the issues of dealing with offshore wind power—and we heard about that earlier in a couple of other presentations here—is that we're going to have to keep in mind as we get into some jurisdictional issues of the federal government having control of the water beyond the water's edge.

The other observation, where John lives—and it's a serious problem on the north shore of Lake Erie—is that we're losing hundreds of acres every year into the lake as a result of erosion. That may be something else you should consider pursuing, John. I don't say that tongue-in-cheek. If there were some way to harness the wave power and deal with the waves, then maybe we could solve the serious erosion problem. But the jurisdiction is something I think you're going to have to consider.

Mr van der Veen: I could answer that, Steve. In my 100-acre farm right now there is about 45 acres worth of a water lot. That's on my tax bill and everything else. That comes from the original deed of the property. There might be some legal reasoning behind that I do in fact still own that even though it's presently under water. Secondly, if I build an island on which to put the windmill then that's no longer in the water, is it? So there's another consideration. I'm saying, legally speaking, there is sort of—as far as the erosion, the erosion rate is roughly two feet per year.

Mr O'Toole: You must have worked for the federal government.

Mr van der Veen: I did indeed.

Ms Churley: Just one quick question, because I think we're pretty much out of time. I'm just curious. You're an individual, you're a farmer, and it sounds like you want to grow something different on your land. I'm wondering if there are other farmers—we've had companies come in promoting wind power but you're the first individual. Are there other farmers interested in pursuing this on their own?

Mr van der Veen: There are several other farmers in my neighbourhood who were approached by Vision Quest from Alberta, as was I. They offered a contract to us which is worth a couple hundred dollars per year and it tied us up for roughly 10 years. It's so ludicrous really that in fact it tied our hands. But at that time many different farmers met with me and said, "What do you think? Being an economist, what the hell do you know?" The truth of the matter is, they don't know exactly how to proceed. They know that fairly large amounts of money are involved. They don't have the money, of course, in their pockets, and this is really why I'm here. If this thing works out to my satisfaction, then I'm sure you're going to get lots of other people involved also.

The Chair: Thank you very much for a most interesting presentation and good luck on building your island out in Lake Erie and negotiating some of that land under the water. We appreciate your presentation. We've heard quite a bit about wind power this evening. It's been intriguing, to say the least.

We now stand adjourned and we'll reconvene tomorrow at Queen's Park, room 151, at 9:30.

The committee adjourned at 2002.

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