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Chair

Mr. Lee Richardson

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● (1535)

[*English*]

The Chair (Mr. Lee Richardson (Calgary Centre, CPC)): The meeting will come to order.

Welcome back to Ottawa all the visitors to Fort McMurray.

Today, we're going to hear witnesses in a normal exchange. I want to welcome Jim Carter from Syncrude; Mark Shaw from Suncor Energy Inc.; Rob Seeley from Albian Sands Energy Inc.; and Tony Clarke—of a different ship than the three companies—from the Polaris Institute.

We'll get right to it. We don't have any business today other than hearing witnesses. What our practice has been over the past while is to allow the witnesses ten to fifteen minutes to present an opening case, and then we'll just simply ask questions.

It's really an information session. Nobody's on trial here. We're just trying to get a better understanding of the oil sands, the development, and what is happening.

We had a very good day yesterday in Fort McMurray, but I'm sure that day raised a lot of questions too.

So without further ado, have you decided on an order or how you're going to make the presentations?

Jim, are you going to start?

Mr. Jim Carter (President and Chief Operating Officer, Syncrude): Yes.

The Chair: All right. I'll let you go ahead for ten minutes, and if there's a brief supplementary from Mark or Rob, you could add it at that time. Then we'll go right to Tony before we go to questions. That works for everybody.

I'd like to begin with Jim Carter, who is the president and chief operating officer of Syncrude.

Mr. Jim Carter: Good afternoon, Mr. Chairman and members of the committee. I'm certainly pleased to speak with you today on behalf of Alberta's oil sands industry.

I would like to introduce two industry colleagues who have joined us for this meeting. Mark Shaw is the vice-president of oil sands sustainability for Suncor Energy, and Rob Seeley is vice-president of sustainable development and regulatory affairs for Albian Sands Energy.

As you know, the economic, environmental, and social impacts of oil sands development has become a topic of much public discussion lately.

We were pleased to have your committee in Fort McMurray yesterday, so you could see firsthand what exactly is going on in the oil sands. I hope you enjoyed your visit to Alberta's vast oil sands resource, and indeed your visit to Syncrude Canada.

I understand you have also heard from the Canadian Association of Petroleum Producers and the Mining Association of Canada on these topics. I am pleased to complement those presentations by offering the direct view of oil sands operators to you today.

As you witnessed in Fort McMurray, while there is indeed a tremendous amount of activity under way, which is bringing many pressures to bear, it is our view that the positive outcome generated by our industry far outweighs the challenges we face. In the interest of time, I will focus my remarks today on economic contributions and environmental stewardship.

Let's deal with the economics first. As you know, the oil sands are a unique resource. They are quite unlike conventional oil and gas deposits, both in formation, recovery, and in the extraction methods as well. Because of this, a generic royalty regime was proposed by the National Oil Sands Task Force to recognize the special circumstances presented by oil sands investment and the operating environment we operate in.

Some key differences include the fact that higher capital expenditures are required to establish or expand oil sands projects than are needed to drill an oil well. This is especially true for oil sands surface mines and upgraders that tend to require capital in the order of many billions of dollars. I'm sure you had the sense of that on your tour yesterday.

Once built, the unit operating costs are also significantly higher than conventional oil and gas. Likewise, sustaining capital costs to maintain these complex facilities, which have a typical lifespan of about 50 years, are also higher. Because of the longevity of our projects and the significant commodity price fluctuations that can occur, we are exposed to a higher variance in economic performance over the life of an oil sands project.

Compounding this issue is the fact that once built, an oil sands plant operates on a continuous basis and cannot be shut down during times of low crude oil prices. In fact, if anything, the opposite is true. When crude oil prices go down, we try to maximize our volumes so we can get a lower unit cost and try to maintain positive cashflow. As a result, oil sands developers must take a long-term view to resource development.

The generic royalty regime was established to recognize these unique aspects of oil sands development and provide a fair and equitable balance between risk and reward. In fact, this regime was established to encourage the development of the oil sands and overcome the barriers presented by high capital costs in the face of an uncertain long-term fiscal regime. It has taken nearly ten years to begin to attract this large-scale capital investment. I believe we must maintain this stable fiscal regime or investor confidence will most certainly be shaken.

We recognize that there are many challenges in developing these deposits. Labour and material supply are probably two of the most pressing challenges at this particular point in time. Importantly, these challenges speak to how the industry will pace development in an appropriate manner. If project operators are unable to secure the people, supplies, and the services they need, then they will voluntarily take appropriate action to manage that situation. In fact, this has already been demonstrated to be the case. That is why we believe the market economy should prevail.

Just to elaborate on that a little bit, as the supply of labour becomes shorter, the costs of that labour go up, and the costs of materials go up. All of that gets fed into the economic evaluation of the projects. As those prices go up, people tend to take longer to make their decisions. We've already seen some of the projects move out to the right in time, so the marketplace is really prevailing there, and if crude oil prices fell and those costs continued to go up, then those decisions would be made based on the merits of the economic evaluation at the time.

● (1540)

The Alberta government receives royalties according to a pre-payout and post-payout formula. Currently, more than 50% of the oil sands projects that are in production are at the higher rate of early payout, so there are more than half that are now at the full rate. In 2005, the Alberta government collected about $827 million in royalties from oil sands development. This number will more than double to a projected $1.8 billion in 2006. Several major projects, including Syncrude's UE1 expansion, which you saw yesterday, and Suncor's Millennium Cogeneration Project came into full payout.

The industry's royalty contribution to the people of Alberta will continue to climb dramatically over the next several years as more oil sands projects come online.

In addition to royalties, governments receive corporate and personal taxes from oil sands companies and their employees. If we look ahead to 2008, if we assume a crude oil price of U.S. $50 a barrel, royalties for that period could be projected at $2 billion. There will be almost an additional $1 billion collected in an Alberta corporate tax, so it's about $3 billion for the province between royalties and corporate tax. As well, the federal government will benefit handsomely, with a take that is even greater than that of the Province of Alberta.

In the longer range, we project that the provincial government will take in between $5 billion and $7 billion per year in tax and royalty payments by about 2015. Therefore, we submit that any comparison of royalty regimes with other jurisdictions needs to consider both the unique aspects of oil sands development and the total financial benefit to governments over the life of these projects. The significant direct and indirect economic activity and job growth created by the oil sands should also be considered. In 2005, for example, the $8 billion that was invested in the oil sands created jobs and worked for stability and increased economic activity from one end of the country to the other.

Our industry forecasts that capital expenditures over the next five years will annually range between $8 billion and $12 billion, for a total of about $54 billion. Importantly, this figure does not include the billions more that will be spent on sustaining capital and operating expenses on these facilities after they go into operation, post the construction period.

About 40¢ of every dollar spent by an oil sands developer goes beyond Alberta's borders, and this constitutes a significant contributor to the Canadian economy. It ensures that all Canadians ultimately benefit from oil sands development through job creation and manufacturing opportunities. This flow-through effect has been verified by the Canadian Energy Research Institute as well as by external independent studies.

These days, it is clear to pretty well every Canadian that the oil sands generate thousands of jobs, everything from trades to professional and technical positions, and while fabrication and manufacturing opportunities are being felt primarily in the Edmonton region, other areas across Canada benefit as well through subcontracting. One need only consider the number of direct flights that have been added between Fort McMurray and other parts of Canada over the past few years to gauge the economic impact of oil sands across the entire country.

We anticipate that the $54 billion on capital investment projected over the next five years will create 26,000 direct jobs by 2011. For each of these, studies indicate a further three jobs are created in the service and support sectors, resulting in a total of 100,000 jobs created.

Our industry does a very thorough job in generating projections for both spending and job creation. Oil sands companies participate in surveys so that we can produce activity forecasts and provide highly detailed information that is then shared with local and provincial stakeholders to facilitate their planning for development. Nowhere else in Canada is there such a comprehensive projection done, along with the analysis of potential socio-economic impacts and the benefits to the region, the province, and to the country as a whole.

● (1545)

Having provided you with some background and facts about oil sands development, let me now turn to our industry's vision for the future. We see a tremendous wealth of resource and opportunity at our doorstep that can be and should be responsibly developed for the benefit of all Canadians. This requires a collaborative effort between government, industry, and community stakeholders if it is to be accomplished in a manner that manages and respects the environment, while generating a positive legacy of opportunity for future generations.

We envision a secure economic future for Canada, with oil sands development as one of the pillars of that future. We also see a country that is a centre of excellence for innovation, for technological advancement, and for environmental stewardship. Through investment and research and development, industry and government can continue to lead the way with a sustainable oil sands industry, one that continuously improves in its environmental mitigation and conservation efforts.

These innovations will no doubt assist in developing the oil sands resource, but they will also foster further projects of a broader social good. On this, I would like to point to the work of the Alberta Chamber of Resources, which has really done an excellent job of laying out a technology vision in its oil sands technology road map. The road map describes many of the internal and external challenges that must be addressed to achieve the industry's growth vision in a manner that is economically, environmentally, and socially responsible. It notes that investments in technology development for the industry must be dedicated and sustained, and that governments and industry need to develop a collaborative, long-term strategy. Importantly, while many gains have been made in organized research and development, and indeed in operational practices, we still need fresh approaches and a diligent focus on this task.

I could give you a litany of examples of environmental process improvements that have been enabled by research and development, but that's not why we're here today. We're here to discuss how we can move the oil sands forward in a responsible manner, one that protects the environment while also protecting the very significant economic benefits that come from the development of this resource.

Now all of this is to say that we know what our environmental challenges are and we are committed to dealing with them, and we have been dealing with them, whether it pertains to water use, to energy use, to tailings management, to land reclamation, air quality, greenhouse gas emissions, or other issues. In fact, just as technology development has been a driving force in achieving improved economics for the oil sands industry over its first 40 years of commercial operation, cooperative technology development will be the key that helps us to meet our increasing environmental challenges as well.

Over the last decade or so, there has been a significant amount of R and D coordination and work taking place in organizations like the Canadian Oil Sands Network for Research and Development, the Petroleum Technology Alliance Canada, the CANMET Energy Technology Centre, near Edmonton, the Alberta Energy Research Institute, the Alberta Research Council, the National Research Council, here in Ottawa, and any number of universities. This indicates that the need for a renewed approach to a technology development plan does not start from zero. There is already a significant knowledge base.

In fact, there's an excellent research base to build on if industry takes a leading role in funding and encouraging further research and development, with the support of our governments and the research institutes. Collaboration will facilitate long-term funding and it will help produce more all-encompassing and more effective outcomes. Admittedly, some of this is relatively uncharted territory, but I do believe we have more to go on than just a wing and a prayer on this. We have significant bodies of scientific knowledge that did not exist, for example, when Syncrude first commenced operation.

So because crude oil will continue to be a primary energy source well into the foreseeable future and because we have this vast resource right in our own backyard, we should use oil sands development as the bridge between the hydrocarbon era and future energy forums—and we should reap the benefits while we can; otherwise the opportunity will be lost forever.

In conclusion, let me reiterate the opportunity for industry, governments, and various R and D providers to reinforce our current R and D efforts, to coordinate a wider technology development agenda, and to generate the outcomes that we all want to see. We currently do much good, but we could do better, and we recognize that our licence to operate comes from society. So let's recognize the great distance that we've already travelled on that road towards a more sustainable oil sands industry. Let's build on all the work that we've already done and the cooperative R and D structures that are already in place by dedicating adequate resources to meeting these very compelling challenges. Obviously, this will be a joint venture among industry, governments, and society, and it will certainly require substantial commitment on all of our parts. Where there is the will, there is also, most certainly, the way.

● (1550)

For these reasons, Mr. Chairman, we believe oil sands development can proceed in a manner that is compatible with the public interest. We feel strongly that this resource can create significant and sustained value for all citizens of Canada and that our issues can be responsibly and appropriately managed if there is the will among all stakeholders to do so.

With that, I thank you for hearing from us today. We would be pleased to entertain your questions.

Thank you.

The Chair: Thank you, Mr. Carter.

I think we'll proceed right away with Mr. Clarke's comments. Then we'll move to questions.

Mr. Clarke.

Mr. Tony Clarke (Director, Polaris Institute): I will speak very briefly today. I won't take a great deal of time.

My name is Tony Clarke, and I am from the Polaris Institute. Together with the Parkland Institute in Alberta and the Canadian Centre for Policy Alternatives, we have been engaged in monitoring and watching the developments that have been taking place in the Alberta tar sands or oil sands.

We recently conducted a review and study of what was happening and produced a report called *Fuelling Fortress America*, looking at the Athabasca tar sands and its implications for Canada's energy policies. This work we carried out was done through a series of little teams moving in and having conversations with various people in the industry, various people who were working in various parts of what was happening, and also with aboriginal peoples, first nations peoples, plus environmentalists and a number of groups in society at large.

Through this process we were able to come up with a series of observations, part of which I'll briefly share with you today, along with some recommendations and proposals for where we might go in the future.

I want to concentrate my comments—in spite of the fine remarks we've just heard from the industry itself—on the deep concerns that exist on just how haphazard the model of development is that's occurring. To a large extent, permits are being granted all over the place without any reference to a clear set of criteria or a clear model of development itself. Certainly the whole question of coherence with regard to both criteria and model of development is really of deep concern. This is a form of haphazard resource extraction that does need to be brought under some measure of control. So that's one thing.

The second thing is that I think we need to recognize the extent to which we are dealing with the dirtiest form of petroleum production. We therefore have to take real care in terms of the environmental implications and understand what the environmental or ecological costs are in the long run.

In that regard, we felt it necessary to go into a number of topics, although I'll only cover a few here today. The first of those topics has to do with greenhouse gas emissions.

I think everybody realizes that when we're talking about the oil sands or tar sands, we're talking about the production of carbon and the production of greenhouse gas emissions, which are three times those from conventional oil and gas production. Under any circumstances, but especially in the current climate, this is something we need to give very serious consideration to.

The whole role of Canada internationally on this is very much at stake. The fact that we are unable to maintain our Kyoto commitments—or even come close to measuring up to our Kyoto commitments—is of deep concern, I think, to many people in the country in terms of the implications of the tar sands and the oil sands development that have taken place thus far.

We're dealing with a situation where, according to the National Energy Board, for every barrel of synthetic oil that is produced from the tar sands, an estimated 125 kilograms of carbon dioxide are released into the atmosphere. The Athabasca tar sands will be making the single largest contribution to Canada's greenhouse gas emissions by 2010. According to a report by the Natural Resources Defence Council and the Sierra Club of Canada in 2002, the greenhouse gas emissions in Canada will grow to 827 million tonnes in 2010. That's 44% beyond what Canada is permitted under the Kyoto Protocol.

● (1555)

All of these are I think dimensions of the issue that need to be looked at very seriously. The fact that there are no clear-cut targets with regard to greenhouse gas emissions from the tar sands themselves and the fact that we still have not developed the kinds of technologies that are going to help us substantially reduce those greenhouse gas emissions from the tar sands do raise some profound questions. I think this committee in particular and the federal government as a whole need to take full responsibility for addressing these issues.

The second point has to do with water depletion and contamination. Once again, I think the extent to which the oil sands production does require a great deal of fresh water to produce the oil and the in situ process of getting the petroleum separated from the bitumen are things that have been largely overlooked. I think you probably saw examples of how this is done during your visit to Fort McMurray.

It's important to keep in mind I think that according to our studies and estimates and investigations of this in a variety of different ways, between 4.5 and seven barrels of water are required for the production of every barrel of crude oil out of the tar sands. When we look at that, I think that it is of profound disproportion, especially in an area that is somewhat fragile with regard to future water sources. If we look at Alberta as a whole, 37% of all the fresh water sources in Alberta have been allocated for oil and gas production. If you take the Athabasca River itself, up to 66% has been allocated for the tar sands production alone.

I think we have to put this over and against the kinds of predictions that water scientists have been putting forward about just how serious things are getting in the prairies these days with regard to sources of water. Dr. David Schindler has been showing how the drop in the levels of the Saskatchewan, the Athabasca, the Bow, and other rivers throughout the 20th century has been very serious. They've been going down and down. When you look at the melting of the Arctic glaciers that affect, for example, the water flows into the Bow River, you can see that there are some serious warning signs on the horizon with regard to water use and water demands.

I think in this case we need to take a hard look at this and understand what is happening. Again, the technologies do not seem to be there, unless new ways of fueling and processing the oil sands are in play and are going to overcome the major problems of water depletion and contamination that are in front of us. With regard to contamination, the tailing ponds that have been produced—over up to I think something like 15 square kilometres—are becoming huge lakes made up of liquid that is not really usable again or is not being transformed and cleansed so that it can be used as water in the long run. I know there are different things that are being done by the companies on this, but I want to point out the fact that there are some serious challenges in dealing with the contamination of the waters that are already used.

The third point I want to draw your attention to is the fact that we are at a point of transition, I believe, with regard to energy and energy futures. With the tar sands and the oil sands, it's more than just dealing with the question of what kinds of oil and gas reserves we have for the future; we also need to take a hard look at what is on the horizon with regard to matters dealing with things like peak oil itself.

● (1600)

I think many parts of the world are waking up to this. They realize that a major transition needs to take place. If you go to Sweden and other parts of Europe, you see very clear strategies being pursued for energy alternatives. Not to play around with puns or anything, but we will be sticking our heads further in the sand if we do not use this moment and this time to start to make a transition to energy alternatives.

By that I simply mean that we need a new energy strategy that looks forward and starts to plan for the fact that even though the oil sands provide a great white hope for the United States at this time, it is not a great white hope that will last forever. Unless we start to make some serious transitions, we will be in some serious trouble ourselves, not the least of which is because we are exporting so much of the oil being produced from the oil sands and tar sands to the United States itself.

We are below the 10% mark in conventional oil reserves and natural gas reserves. If the natural gas that's used to fuel the tar sands continues apace, we will find ourselves in even more dire straits with our natural gas reserves. We need to recognize that and understand that we need to plan much more for the next 20 to 25 years and the kind of transition that needs to take place toward renewable energy alternatives.

We also need to take a hard look at things that continue to propel us in this direction. We have dropped the policy we once had where it was essential that we maintained 25% of our oil and gas reserves intact. We have gone well below that now—and that's for conventional reserves. Furthermore, there is a proportional sharing clause built into the North American Free Trade Agreement, and if we were to put a quota or a ban on the export of either oil or gas because of our own energy security needs, there would be a serious economic and legal retaliation.

As a result of this, I think we need to take a hard look at where we are right now, what kinds of changes we need to make in existing policy instruments, and what it means to actually take the step forward to develop a made-in-Canada energy strategy and policy.

As noted in our report, we feel it is essential at this time to look at what it means to create the space to develop these kinds of strategies for the future. In order to do so, a moratorium should be put on future development of the tar sands—not on existing projects, but on future permits and expansion of tar sands development—in order to provide the necessary time to make the kinds of reasonable and thoughtful decisions about this valuable resource and its implications for the environment and society at large.

So we call for a moratorium, and in that context, that means providing the time and space to actually develop a made-in-Canada energy strategy and policy that we so desperately need.

Thank you.

● (1605)

The Chair: Thank you, Mr. Clarke.

We'll move to questions and begin with Mr. St. Amand.

Mr. Lloyd St. Amand (Brant, Lib.): Thank you very much, Mr. Chairman.

Thank you, gentlemen, for your presentations.

Allow me to say to you, Mr. Carter, how hospitable your employees were to us yesterday. Let me just mention Don Thompson, who was very thorough in his presentation; our guide, Laura Gallant; and Charles. Similarly, at Suncor we were briefed by Steve Williams, who served you well; and Janet, from Shell. It was warm and hospitable for sure.

Mr. Clarke, I understand from your presentation that by 2010 the oil sands will be the largest emitter of greenhouse gases in Canada. What is the largest emitter now, if you know?

Mr. Tony Clarke: I don't exactly know, except that Alberta has been surpassing Ontario as the largest greenhouse gas emitter. Within that context, the tar sands are becoming number one.

Mr. Lloyd St. Amand: All right. With respect to carbon sequestration, I'm no scientist or engineer. My background was law, so I'm waiting to be persuaded by your obvious expertise.

The concern I have is that I presume the advent of land claims throughout Alberta would surely have an effect on, if not impede, the construction of sequestration pipelines. That is clearly on the horizon now. The issue of cost proportion has yet to be resolved, and the issue of the science involved and even the methodology of capturing the carbon and putting it into the ground is a little murky—no pun intended.

Is it a bit of a false hope to say in so many words to the public that, yes, the emissions are on the rise, there's more and more carbon being spewed into the atmosphere, but don't worry, in the not too distant future we'll be capturing a lot of it, putting it into the earth, and there will be no more worries about it? Is it unrealistic to think that carbon sequestration is very close to us?

Mr. Jim Carter: Let me begin by saying a couple of things.

First of all, our industry has worked very diligently at trying to reduce our emissions per barrel of production. It's something we've all done over the years that we've been working in this industry. It's actually one of the steps that has helped to make it competitive, because it costs money to consume energy to make oil, drive your car, or whatever.

We've been reducing the energy consumed per barrel. In fact, if you look at what the industry has accomplished since 1990, we reduced it by about 17% on a basis of per unit of production. We think when going forward we'll see another 17% by 2010-2012. We'll be at about a 30% reduction per unit of production.

We've done it by implementing new technology. You witnessed some of the technology yesterday, where we actually mix the oil sand with water and pipeline it into the extraction plant. We've been able to reduce the transportation costs of moving the oil sands to the extraction facility.

We've also been able to lower the temperature of the process. We've gone from 80 degrees Celsius down to about 40 degrees. As a consequence, we've reduced the energy input for extracting a barrel of bitumen out of the sand by about 40%.

That's one thing we're doing. We continue to strive to try to find ways to reduce the energy consumed.

In terms of the opportunity for sequestration, we see it as something that has some promise. The industry has been working with the provincial Government of Alberta, through the Alberta Chamber of Resources, for some time now on a process that would enable us to take the almost pure CO_2 that we make in the oil sands.

It primarily comes from our hydrogen plants, because essentially what we're doing is taking natural gas, CH4, or methane, and converting it into hydrogen, which we then add to the oil. We sell it at a much higher price, by the way, than the value of natural gas. This is secondary and I would even argue it's tertiary manufacturing that we're doing.

When we do it, we make a lot of carbon dioxide. The carbon dioxide is amenable to then be used for enhanced oil recovery. The dilemma is the transportation costs to get it from Fort McMurray to the conventional fields in Swan Hills, or wherever in the southern part of Alberta, where the enhanced oil recovery techniques are being used.

We see it as a promising opportunity. We need to somehow get the economics to line up. If there was an old pipeline that had been used for some other purpose and could be converted into this, and if the royalty arrangement on conventional crude oil required for enhancing for recovery could be revisited, we think there's a really good chance this could be done.

● (1610)

Mr. Mark Shaw (Vice-President, Oil Sands Sustainability, Suncor Energy Inc.): If I could add to that, sir, you asked about the technology. We believe the technology is already proven, and it can capture carbon dioxide and sequester it.

Mr. Lloyd St. Amand: With respect to the economics, and I'll phrase this respectfully, you've made the valid point that some billions of dollars are returned to government via taxes and royalties—billions of dollars—but there are tens of billions of dollars, surely, that are going to companies. This is a real revenue generator for companies, billions and billions of dollars of profit. So on a licence to operate, should and must a level of government get involved in funding the sequestration pipelines if in fact there are tens of billions of dollars being made by the companies? Is there not an obligation on the companies to do it on their own without the government kicking in? That's a matter of policy, but just—

Mr. Jim Carter: I think you need to consider and think about the cashflows that come out of the oil sands. As I was pointing out earlier on, the province is a big recipient of cash, and the federal government is, in the form of corporate taxes, payroll taxes, and that sort of thing. So everybody has a stake in this whole thing being successful and being a good economic locomotive for the Canadian economy.

I don't see it as being any different from any other thing the government might decide to get involved in when it's kick-starting a new process that might have a lot of benefit further down the road. Being a participant in that, from both the federal and the provincial government's point of view, would be a good thing, actually, to ensure the ongoing development. It would enable it to get started.

Once it gets started, it's like any other form of technology. Once you get the ball rolling, it starts to get legs of its own and it gets traction. But it needs that initial support and boost to get it going.

Mr. Lloyd St. Amand: I have one last question, if I may, Mr. Chair.

I appreciate that this is perhaps doing something against your own interests, but with respect to what Mr. Clarke has said, on solar, wind, alternative sources of energy, renewable sources of energy, what, if anything, is done by way of research and development by your companies?

● (1615)

Mr. Jim Carter: Let me speak first. I know Rob will want to say something about what Shell and Albian have done, and I'm sure Mark will as well.

What we have done at Syncrude is really focus on the processes that we have internally. We've spent $50 million a year on R and D since the inception of our operation back in 1978. It was us who actually invented the hydrotransport technology, and we sold it to others. We sold it to Shell, we sold it to Suncor, we sold it to CNRL. We've put a lot of effort into R and D into those processes. We have energy-efficient furnaces now. We have cogeneration on all of our steam generation and our power generation, so we're looking at the most efficient ways we can, from an energy consumption point of view, make a barrel.

That's where we've had our focus as a company. Others have gone beyond that, and maybe I'll let them speak to that.

Mr. Rob Seeley (Vice-President, Sustainability and Regulatory Affairs, Albian Sands Energy Inc.): Thank you, committee.

Just as a general comment about energy futures, Mr. Clarke made comments around the need for diversification, and I think we would all agree that it is a valid point; however, we would like to state that the demand for energy in the world continues to grow, and hydrocarbons are going to be a continued significant part of the energy portfolio going forward to at least 2050. So the production of crude oil from the Canadian oil sands is replacing our declining conventional oil here in Canada and in North America. It is also displacing imported crudes into North America, and they're our direct competition. We need to be able to do that efficiently and economically, and as Mr. Carter has mentioned, a lot of resources are going into the efficiency of our business.

Shell is also investing in renewable energies. We have about $1 billion invested over the last five years in renewable energies through our Royal Dutch/Shell group, and this of course is solar, wind, and alternative fuels. This will be a diversification of the energy portfolio, but it does not displace the transport fuels component, which is predominately met by hydrocarbons. Looking forward into the future, we'll continue to be met by hydrocarbons.

So it is a different energy mix that alternatives bring. It's about electricity and off-grid applications, but it doesn't displace transport fuels.

Mr. Mark Shaw: I would just build on that. Each company chooses its own markets to participate in, and as Mr. Carter had indicated, research and development of new technologies is extremely important to all of us.

Suncor has been investing over $100 million a year in wind energy, and we anticipate doing that going forward. We also invest in biofuels. So we would agree with Mr. Clarke that the world is going through an energy transition, but that's many decades out.

The Chair: Thank you.

We did go a little over time there.

I'll move now to Madame DeBellefeuille.

[*Translation*]

Mrs. Claude DeBellefeuille (Beauharnois—Salaberry, BQ): Thank you, Mr. Chairman.

Thank you very much for your presentation.

I enjoyed the visit to Syncrude, in Fort McMurray. I learned a great deal, but I came away from the visit with several questions in my mind.

Every day the newspapers tell us that today's planetary challenge, namely climate change and its effects on the entire planet, is important. As parliamentarians, and as elected representatives, it behooves us, in the context of our study on the oil sands, to adopt not a short-term approach, but one that looks out onto the next thirty years. We must, given all of the development activity going on at present in Alberta, ask ourselves what is going to happen in Quebec, in the other provinces and in Canada.

Alberta can choose to risk seeing its groundwater polluted or choose to cut its trees: these are areas that fall under its jurisdiction. However, what is having an effect on everyone, throughout Canada and all across the planet, are the greenhouse gases that are spewed out into the atmosphere.

A Shell Canada representative, by the name of Janet, I believe, told us that CO2 captation and sequestration technology already exists, but that it is not being applied because it is not economical. This same representative stated that, in her view, this technology might become operational around the year 2012.

I would obviously like you to explain to me exactly what this woman was implying when she stated that this technology is not economical. Given the profits that are flowing to the oil companies that are active in the oil sands, as taxpayers, we are somewhat shocked to hear say that technology that would allow for a considerable reduction in greenhouse gas emissions is not being used because it is not economical.

Mr. Seeley might be able to answer my question.

● (1620)

Mr. Rob Seeley: Thank you. If you allow me, I will answer in English.

[*English*]

With respect to carbon capture technology, Mr. Shaw has made some reference to this already, but there is technology existing for the capture of carbon dioxide from our upgrading components, which Mr. Carter has also referred to. With oil sands production we're talking about mining operations, producing raw bitumen, and then we have a secondary component called upgrading, where we add hydrogen, crack the materials, and make light synthetic crude oil that is sent to the markets in Canada and the U.S.

It's in those upgraders where we have the opportunity to capture the carbon dioxide in our hydrogen complex. Different operators have different models. I know Suncor and Syncrude both have their upgraders attached to their mines in Fort McMurray. In fact, Shell has its upgrader near Edmonton in Fort Saskatchewan. So we've actually separated the mine from the upgrader. Our upgrader is in Fort Saskatchewan just outside of Edmonton. If we capture the CO_2 at our upgrader in Edmonton, it is in fact very close to sequestration points in central Alberta, the Pembina and Swan Hills oil fields, which are aging oil fields. There's an opportunity to capture the CO_2, pipe it out, and inject it. However, the capture of the CO_2 is very expensive. We would have to spend hundreds of millions of dollars for the infrastructure to capture it, and then hundreds of more millions of dollars for the pipelines to the fields where it could either be injected or sold to third parties for use in enhanced oil recovery. Clearly, although the technology exists, Shell is not going to implement this technology and put itself at a significant disadvantage to its competitors that have chosen not to, for example, for whatever good reasons.

With respect to this technology and the need for infrastructure, there are two solutions. One is to enable the technology through some partnership for the investment in the infrastructure—the pipelines from these upgrading hubs, whether it's Fort McMurray or Fort Saskatchewan, to the fields. So partnering on infrastructure is one.

Two, as the government goes forward and makes regulation with respect to greenhouse gases, it should consider what we would call market mechanisms in these regulations. The regulations need to be appropriate, but at the end, I think industry is preferable to what we call market mechanisms that would have emissions trading, and therefore reductions in CO_2 could be considered as offsets. It's another way of funding or financing these kinds of investments.

We would look for a stable fiscal regime around greenhouse gases that would allow major investments. These are major investments as well. Without some incentive or regulation that's fair to all, industry won't take these on a voluntary basis. It will put us at a competitive disadvantage to our competition, which happens to be the imported crude to North America, as I mentioned. We're displacing imported crude, so we would be at a disadvantage to our competitors.

[*Translation*]

Mrs. Claude DeBellefeuille: Thank you very much.

We read in the newspaper that Russia is planning on filing a complaint before the Stockholm Court of International Arbitration because of the environmental damage brought about by an oil and gas project. You say that Canada and Alberta are benefiting from economic spinoffs, in brief that everyone is getting richer thanks to oil sands development.

However, the people I represent often ask me the following question. How can you assure Quebeckers and Canadians that once these resources have been completely depleted, you will not simply move on, leaving behind you an abandoned mine? How can you assure taxpayers that you will not simply leave, after having taken what was there, leaving them, as is the case of the Russians, to deal with and to pay for the environmental damage left behind?

● (1625)

[*English*]

Mr. Rob Seeley: Perhaps there are two questions to answer. One is with respect to Shell in Russia, which is meant by your reference to the newspaper articles on the Russian Sakhalin Island project. That is a joint venture between Shell and Japanese companies.

Essentially, there are very complex nuances underneath all of those newspaper articles. Essentially, they are about the Russian government leveraging for ownership in that development. Really, the charges and things they're talking about in the press are, I believe, untrue and unfounded. They are a leverage by the Russian government to attain, in their negotiations with Shell and the Japanese companies, ownership of those resources. So that's a separate issue.

Let me get back to oil sands, with respect to your question on what assurance the oil sands developers can give that these oil sands sites will be reclaimed and will not be legacy environmental issues of the future. I stand here with all my colleagues to say that our approvals for these oil sands mines—both from the Alberta government and from the federal government through the Department of Fisheries and Oceans and other agencies—require us to fully reclaim these sites.

It is our intention and full commitment to reclaim the oil sands sites. There is a significant amount of research going into the reclamation programs for all of our businesses, and essentially we're looking at reclaiming these sites to fully sustainable ecosystems. I can't say that they will be exactly the same as they were before. Of course, peatlands are being removed. But what will be replaced is...a diverse landscape that will have wetlands—we will call them marshes—that will have uplands, that will have forested areas. All of these things are part of the reclamation programs that are under way today, and part of the research that goes with them. These sites will not be left as a legacy for Canadians in terms of environmental liability.

I would also say that oil sands developments are for deep pockets. These are for big developers who have the financial strength to commit to these kinds of reclamation programs, along with the technology, the people, and the operating experience to go with them.

Mr. Jim Carter: I'd just like to add to that, just to elaborate a bit on Mr. Seeley's response.

In Alberta, to get a permit application approval to have a surface mine in the oil sands, you have to submit a development and reclamation plan that describes the final land closure even before you're allowed to start mining. Those requirements are very much a part of the approval process, and they require the operator to return the land to a productive state greater than it had when we arrived. Therefore, you see things like the trees you probably witnessed yesterday that had been planted, the bison ranching that we're doing, and those kinds of things. They are done on a biomass basis that makes for a more productive landscape than was there before we arrived.

Mr. Mark Shaw: I would add to that.

Suncor was the first in this business, working cooperatively with Syncrude over a period of about 25 years. We have invested in technology to enable us to turn our tailings ponds into these solid landscapes that would then reach equivalent capability as we reclaim them. Suncor is very committed to returning the landscape to its natural, pre-disturbance-equivalent capability. All of us have significant reserves that will last many decades.

We live in this community, so we fully intend to deliver on that. It's actually also my personal responsibility within Suncor to achieve that. We were the first in this business, and we're very close to reclaiming our first pond. Being the first in the industry, we'll be the first to achieve that, and within the next few years you'll be able to walk on what is currently a lake. It's not very deep now because it's almost filled in and it's almost turned into a solid landscape. Within a few years we'll be able to show that.

As one of our tests, we ask local aboriginal elders who grew up in this land to walk through our reclaimed landscapes and tell us if they can tell if it's a created landscape or a natural forest. That's one of our tests. They can't tell that it's landscape that we've created. So we're very committed to this, and we're very close to being able to do it.

To touch on one of the points that Mr. Clarke made, we do have a fair amount of water that is currently tied up in tailings ponds. As we turn these into a solid landscape, the technology to make that water—water that we currently recycle through our process, thus enabling us to reduce our footprint from the Athabasca River—capable of release to the natural environment is technology well used today, and we'll continue to do that.

● (1630)

The Chair: Good.

We have gone over time.

I sense Mr. Clarke wants to add a brief note.

I should add that a week from today the committee will hear witnesses who will deal specifically with reclamation. We will have representatives from the Boreal Initiative. Bruce Friesen from Syncrude will be here again to talk about reclamation, probably from both sides of any argument there might be in that regard.

If you could respond, Mr. Clarke, very briefly, we're over our time limit.

Mr. Tony Clarke: I'm sorry.

Very briefly, I have no doubt that the reclamation projects are initiated. It's what we don't know about reclamation projects that I would hope the committee would take into consideration. There are many ecologists who have been examining the reclamation projects, the capacity of humans to actually put this back together and make it look all good on the surface. But what lies beneath the surface? What kind of destruction and disruption has actually taken place, and what are the impacts of that?

If you look at the studies by the Pembina Institute, in Alberta, or the Natural Resources Defence Council, and other studies, which have been done by reputable scientists in universities, I think you will find there is a great deal of question about what is possible with regard to reclamation projects. We have to keep in mind that when we rip out a fairly significant portion of the boreal forest, we are taking away a chunk of the northern lungs of the planet. What kind of irreparable damage is that actually creating for the long term?

I just want to point out that there are deeper questions that have to be probed before we can simply take at face value the obviously credible initiatives being undertaken.

The Chair: I think that's probably true. We have to be careful about taking things at face value.

Ms. Bell.

Ms. Catherine Bell (Vancouver Island North, NDP): Thank you.

I also want to thank the industry for the hospitality that was shown to us yesterday. That was a very interesting trip. I think we're all worn out from the very long trip back.

I guess the perils of being third on the list to ask a question is that a couple of things I wanted to ask have been answered. Tony asked one of my questions just now.

I am interested in the long-term effects and the remediation aspects. I've been asking other witnesses about what happens. What is left in the soil when it's put back and the lakes are filled in? I understand the water has been used over and over again, and I think it's great that you've been able to recycle and get the volumes down.

I agree, we shouldn't.... That's why I don't want to take it at face value that everything is wonderful and it's back to normal for the forest and the land.

I want to know, when the water has leached through, where does that go? Does it go into the rivers or the lakes in the surrounding area? What, if any, contamination is left in that, and what effect does it have on the rivers? That soil has been contaminated as well, so what effect does that have on the vegetation? If animals are eating that vegetation, what long-term effects are there? I've asked those questions. Basically, the answers were that we don't know. I have some concerns around that.

I'm just wondering, once the land is reclaimed, who owns it? Does it go back to the government? Is the government then responsible for what's left, or is there some onus on the industry to do anything further at that point?

It's a long-term effect, but I think those are the things we have to worry about and to think about. I'd like your thoughts on that.

● (1635)

Mr. Jim Carter: Just to begin, and I'm sure my colleagues will want to answer as well, we have a very sophisticated water management system in our surface mines in the oil sands. To give you an example of that, at the Syncrude mine site our permit does not allow us to discharge water that has come in contact with the oil sands. You can imagine what that means in terms of a surface mine that's as large as that. It means that we've got to have water that comes in contact with the oil sands flowing in a certain direction and taken into a receiving pond and then captured and contained. Water that doesn't come in contact with the oil sands is allowed to flow into the water systems. So we have a very complex water management system to control all of that, and we do that all the time.

We're continually monitoring our tailings storage, our water storage facilities, probably as much as anything from a geotechnical point of view to make sure that we don't have any concerns around the containment itself. But in the course of doing that, we're also monitoring any seepage that we might have coming from those facilities. All of that is put into weirs and handled in that fashion.

In terms of the final landscape, at the end of the day we turn the land back to the Government of Alberta, but we have to have a reclamation certificate that says they are happy with the outcome of the work we have done. All of that has to be permitted, just as it is when you go to get a development permit to actually start mining. We're in the process right now at Syncrude of getting the first reclaimed land permit for that right on the south end of our facility, where you might have seen the bison statues. That whole area has been completed now, and we're applying to the Alberta government to get a reclamation permit for that, at which point it will revert back to the Crown and they will accept responsibility for it. It's a very rigorous process to do that. We've actually been trying to turn it back to the government now for a while. For some five years we've been in negotiations with them on it. It doesn't come lightly.

Mr. Mark Shaw: What I would add to that is information on some of the research we do on reclamations. You asked about plants that grow on top of the reclaimed land. We both have plants that have been growing on top of reclaimed land for decades now, and part of the research is to monitor those plants through good science. We work a lot with the University of Alberta and other universities to measure the uptake of any chemicals that could be occurring in those plants. So we're aware of that, and anything we would do to be able to ensure a natural end landscape.

Mr. Rob Seeley: Maybe just to add on to the concern about hydrology and water contamination, I think just in its simplest form, oil sands mining is removing oil from the sand, using it in market conditions, and then putting the sand back. Then, with respect to the water that's in the sand, the trick is to get the right recipe of putting the sand back. It's sand and clay and water, which are essentially the three components of the recipe, and we need to get that right mix so that it's a stable landscape, and then of course cover it with what we call "overburden", which is heavy clay, rocks, and heavy materials that are non-sand in nature. The topsoil, which was carefully removed and stockpiled before the mining was done, is then placed back on top of that overburden. So that's the reclamation process in its form.

With respect to hydrology and contamination, all of the operations have monitoring wells around our facilities, around our tailings ponds, between our facilities and water courses, whether it's streams or rivers, and we're monitoring any potential seepage of contaminants into these water courses. So it's something that's part of our licences and part of our operation to ensure that this is not happening.

● (1640)

Ms. Catherine Bell: Mr. Clarke, did you want to add anything?

Mr. Tony Clarke: No. The only question I would ask is whether or not there is an independent process at all at work, both on monitoring and in terms of looking at the overall reclamation process. It's very interesting, the process you go through to reach the point of getting a reclamation certificate, but is that model itself being examined independently? And are there independent monitors at work in terms of what is going on with regard to each of these stages you talked about? By independent, I mean separate from both government and industry.

The Chair: That would be independent, would it? I guess it depends on which way you're looking. Thank you.

I should say, on that point, that we are attempting to fill a blank in the schedule in two weeks with Vance MacNichol, who is the chairman of the Oil Sands Multi-stakeholder Committee in Alberta, which is a pretty broad committee. It's independent of any particular group because it's a combination of stakeholders from all interest groups in Alberta. I think it would be a good question, Ms. Bell, to put to that witness as well.

Thank you.

We're going to end round one with Mr. Harris and Mr. Paradis. Mr. Harris, would you like to start?

Mr. Richard Harris (Cariboo—Prince George, CPC): Thank you, Mr. Chairman.

Thank you, gentlemen, for the insight you're giving us into this most important issue. Unfortunately, I wasn't able to make that trip to Fort McMurray, but I will the next time, I'm sure.

Mr. Clarke, I want to go back to something. I think you were advocating that we pull back the production of oil and also our export of oil to the U.S. I think you made that statement earlier, that you thought that would be a good idea to conserve. I think you were talking about conserving our reserves and conserving the resources we have in oil. Am I correct? Did you state something like that?

Mr. Tony Clarke: I didn't say that we should automatically cut back. I was saying that we need to develop an energy policy and strategy that is truly a made in Canada one, recognizing what our short-term and long-term needs are, and re-examining certain traps that we fall into, such as the proportional sharing agreement or clause built into NAFTA. Those are the kinds of things that I was suggesting.

Mr. Richard Harris: But that would probably lead to a cutting back in our exports of oil to America.

Mr. Tony Clarke: It could.

Mr. Richard Harris: If we were to follow that route, I would assume that would lead to an increased dependency by America on, for example, Middle Eastern oil. Their consumption of oil is high, and they're going to try to find it somewhere. If we were to cut back on our export of oil to America, they would need to get it in other ways. Do you think it would be healthy for the stability of the western world, for example, if there were an increasing dependency on Middle Eastern oil by the United States?

Mr. Tony Clarke: I fully recognize the implications of your question with regard to the Middle East and the question of instability in general with regard to access to secure supplies of oil. And clearly, from the United States' standpoint, from Washington's standpoint, having access to Canadian oil—certainly in terms of the potential reserves that the oil sands project—ensures a secure supply, a safe supply, and a friendly neighbour supply.

But at the same time, in your question you referred to "healthy". I don't think it's a healthy situation when one nation—namely, the United States—is dependent on securing 25% of the world's oil production and having it to itself. I think we're reaching a point where we've got to re-examine our dependence upon fossil fuels in the future. Therefore, I feel that at this moment, despite the fact that we have this incredible hydrocarbon reserve that exists in Canada through the tar sands, we all owe it, both to ourselves as Canadians and in relation to our friends in the United States, to raise some hard questions about the future and what it means to make a transition away from dependence upon fossil fuels into an energy renewable alternative.

● (1645)

Mr. Richard Harris: I agree, but those questions have been going on for many years. It's not something new we're talking about. The research and technology to make alternate sources of energy efficient are the big problems. You talked about wind power earlier, and my understanding, from presentations that have been made to us, is that we've got a long way to go before the production of wind power is cost-efficient. So until those alternate sources become efficient, cost-effective ways of creating energy, we do have a dependence on fossil fuels whether we like it or not.

I was curious about your suggestion that we perhaps scale back our production and our export to the States. I think America will find oil wherever it can. The Middle East is the breadbasket of world oil, and it appears to me that would not be too healthy a situation to have so much dependence on one area.

We're probably doing a lot to stabilize the economy and all the other good things we enjoy in the western world by supplying America at this time, while we continue our search for alternate sources.

I have to admit, I'm not fully aware of your organization, although I have heard about it, of course. I'm curious as to where your centre is, where your head office is, and how the Polaris Institute is funded. Where does the funding come from, the operational funding? Who funds your reports, such as the one you just mentioned a little bit earlier? Where does the money come from?

Mr. Tony Clarke: We're based here in Ottawa. The sources of funding for the institute come mainly from foundations. And for this report itself, it came from all three organizations that co-sponsored that report, namely the Canadian Centre for Policy Alternatives, the Parkland Institute, and the Polaris Institute.

Mr. Richard Harris: I see. Okay.

And those are funded by supporters, individual supporters?

Mr. Tony Clarke: Yes.

Mr. Richard Harris: There's no government funding for it?

Mr. Tony Clarke: No.

Mr. Richard Harris: Okay.

I'll pass to another colleague, Mr. Paradis.

Mr. Christian Paradis (Mégantic—L'Érable, CPC): Do I have time?

The Chair: Sure. Take your time. You have four minutes.

[*Translation*]

Mr. Christian Paradis: Mr. Carter's presentation was interesting.

In order to better grasp the importance of the industry and of its impact, I will turn my question upside down. If we were to curb present and future production levels in the tar sands, what would that result in in Canada with regard to both the security of our energy supply and the price of gas and the health of the Canadian economy for consumers, in Quebec and in Ontario, for example?

This question is a broad one, but it is a matter of opinion. I would like to hear what you have to say in this regard.

[*English*]

Mr. Jim Carter: Thank you.

What would it mean for Canada if we were to cease production of oil from the oil sands? Let me frame it that way, and I think that's where you're coming from with your question. This year, for the first time—I guess for the second year now—oil production from the oil sands will exceed conventional crude oil production in Canada. We'll be at about 1.2 million barrels a day this year, versus about 985,000 from the conventional crude oil fields in the country. What is happening is that the western Canada sedimentary basin is declining in its production and the oil sands production is stepping in to take its place. The same thing is happening in the United States, and therefore we have this opportunity for export of crude oil.

If we hadn't had the foresight.... And by the way, I should say that this is a Canadian success story of the highest order. We're talking here about research and development that's been done right here in Canada. This is homegrown stuff, the mining and the extraction of the bitumen from the sand and the turning of it into a viable product that we can put into the marketplace. If we hadn't done that thirty years ago, we would be in dire straits today in terms of our crude oil supplies.

Our company alone, Syncrude, now produces about 15% of Canada's crude oil requirements, and our friends down the street, Suncor, which Mark represents, are at about 13% to 14%. Shell is coming along as well. We're doing this just at the right time, really, for our energy consumption.

We had John Snow, the Secretary of the Treasury from the United States, visit the oil sands a year ago this past June. We flew him around the facility you have had a chance to see. He got off the helicopter and turned to me and said, “Jim, this is a fantastic thing that you are doing in Canada, that you Canadians have accomplished here. You've continued; you've persevered. You've figured out how to get oil out of this sand and turn it into a marketable resource, and we haven't done anything near that in the United States. We had our oil shales in Colorado and were looking at them in the early 1980s, and we abandoned them; we walked away from them. You guys have done it and you've shown us how it can be done”.

So I think we're very fortunate; we're the pioneers. I can tell you from my own personal experience.... I've spent 28 years with Syncrude Canada, every day of it living in Fort McMurray, and the first 15 years that we worked in this business, we were toiling in obscurity. People didn't believe it could be done. They didn't believe we could actually make this into a viable business; they treated it as an R and D curiosity. Through that effort and energy, the development has occurred, and we've continued to invest in R and D. We continue to develop new ways of doing things: more energy efficient ways of doing things, better ways to reclaim the land, better ways to store tailings, better ways to capture the water out of the tailings while it's still warm, so that we can get the energy back out of it.

I think Canada would be in a far less enviable position today if the oil sands had not been developed—and that's all of Canada. A lot of our product goes to the Edmonton area refineries, but it also comes to Sarnia, and it goes over the mountains to the west coast as well. This product goes across the country, and it is really helping to secure our energy security in the country.

● (1650)

[*Translation*]

Mr. Christian Paradis: Thank you.

[*English*]

The Chair: Thank you. That's it for time—I'm sorry—because I know how anxious we are to hear from Mr. Cullen.

Hon. Roy Cullen (Etobicoke North, Lib.): You say that with such insincerity too.

Thank you, Mr. Carter, Mr. Seeley, Mr. Shaw, and Mr. Clarke.

Mr. Carter, thank you for your hospitality yesterday at Syncrude during the look-around.

Thank you to Suncor and Shell Albian as well.

I'm glad I went. We were able to literally kick the tires, and because our chairman was so insistent, we received a photograph of the big wheels.

● (1655)

Mr. Tony Clarke: That's the trucks.

Hon. Roy Cullen: Yes, the big trucks too.

I think what you've done there is quite amazing, and I'm glad I went to see it. You should be proud of the technical and the managerial way it's been put together.

My concern personally is not so much what's going on today but in looking forward. We were told there are something like 18 projects in the pipeline that have some agreement to proceed, and there are another 27 beyond that in the feasibility or advanced feasibility stage.

You've heard about the tragedy of the commons, the story many centuries ago in England of the sheep farmers who all had a bit of private land and there was a common pasture. Well, what happened was the sheep were all put in the common pasture and the common pasture was obliterated. It doesn't take a rocket scientist to figure out why it happened.

You have a certain interest, it seems to me, in what are public goods. You're responsible corporate citizens, but there are clearly limits that you will go to. You have returns to shareholders, and you have an enterprise that you have to maintain and operate. We as parliamentarians have a responsibility for the public good as well, and I'm concerned.

When I talk about public good, I'm talking about CO_2 production. I'm talking about climate change and greenhouse gases. I'm talking about water. I think everybody you talk to knows there are water problems looming in the oil sands.

I'm also worried about the infrastructure in Fort McMurray and the rate of growth there. I know you are concerned about it as well.

You talked about capturing carbon and sequestering carbon, and we heard about the technologies for water recycling. We know water is being recycled, but a lot of it is going into tailings ponds. There's certainly a lag time or a lead time, and some of the water in the tailings will never make it back into the river systems. I think it's an issue.

If you could all agree among yourselves that these were going to be the objectives, there'd be no new projects unless the water recycling achieved the rate of 70% or 80%. I don't know what the number is. The CO_2 would only be permitted up to a certain point and would have to be essentially captured and sequestered.

Oil is a commodity product internationally. If you're all on a level playing field or on the same footing, as long as you can make a return to your shareholders, is it the level playing field you're looking for, or do the economics go beyond that?

Mr. Jim Carter: Well, part of the problem for our industry is that we're not price setters; we're price takers. We take whatever the price is in the world market.

It's probably easy today to say the oil industry is doing well at $56 a barrel, or whatever it happened to trade at today. It's not that long ago, 1998, when it went down to $11 a barrel. It was tough going in the oil sands business at $11 a barrel. You were barely able to make the cashflow. These projects can't easily be shut down. We're subject to the vagaries of the commodity markets.

Our real competition is in the Middle East, in Saudi Arabia. They're putting a barrel of oil on the market for $5 U.S. a barrel. We don't get to set the price. When that happens, we obviously have to be very diligent about what we're doing.

It's a lot more complex than it appears to be today, with what's happening as we speak and with crude oil pricing being where it is. In order for the business to be viable, we have to really take all of those things into consideration, because we're going to have those swings and those ups and downs.

If you took crude oil prices in 1995 and you took them back a hundred years, which was about the length of time crude was being produced, and you brought it into 1995 dollars, crude oil averaged about $20 a barrel in 1995 dollars over that whole time period. It went up and down depending on whether there was a world war or a major invasion going on in certain parts of the world.

We're probably at a different plateau today. I think most people would say we're not back at $20 oil, but I don't believe we're at $60 oil either. We're again going to be faced with those challenges as we go forward.

Hon. Roy Cullen: At today's pricing, the economics probably work, and work well, but moving forward you never know what the price of oil will be.

You're the more established players in the oil sands right now—Shell Albian, Suncor, Syncrude. On the projects in the pipeline, the 18 plus the 27, do you have an interest in them? Are you the prime project leader for some of those? Are you going to be beneficiaries in terms of some of the bitumen coming through to your processing facilities? What is your interest in the new projects moving forward?

Mr. Jim Carter: Speaking from Syncrude's point of view, we don't have an interest in those. We're a joint venture company. Some of our owners actually do have projects that they're proposing to develop in the oil sands, but we don't have a direct interest in those. In fact, if anything, I could argue that it will make the competition even tougher for human resources, which is the big issue we're faced with right now.

● (1700)

Hon. Roy Cullen: What about Suncor and Shell Albian?

Mr. Rob Seeley: Maybe I will just a comment on your earlier question, and that is your concern around the pace of development and the environmental capacity of the region and social issues. In that whole envelope of questions, one important piece to consider is with respect to economics and the demand for this synthetic crude oil. I think it's very important to keep in mind that, again, it's a global commodity; it's a global market out there. Most of our crude oil goes both to Canadian refineries and to certain refining pads in the U.S. We call them Chicago PADD II and PADD V. These areas have a limited capacity, so I think I'm getting to my point, which is to let the market decide. Yes, there are 18 projects on the books, and 27, but how many of these will really go will be dependent on the market and the real demand. We don't believe all of these will go. There will be some discounting, of course.

Hon. Roy Cullen: The market will decide some things, but it won't decide if there are public goods that are being jeopardized. To just go on the chance that the market is going to sort some of these out, I don't think that's good enough for me, because I have a public good that I have a responsibility to protect on behalf of all Canadians.

Mr. Rob Seeley: If it's a public good with respect to environmental capacity, for example, in the oil sands you'll hear probably in the next week or two from the CEMA group, which is the Cumulative Environmental Management Association. It's a multi-stakeholder group made up of NGO groups, aboriginal groups, government, and industry, all working on those strategic questions around environmental capacity for the region, water issues, air issues, etc. I think it's a model for Canada. There has been a lot of work put into this. Industry is putting a lot of funding behind this to see that it succeeds and all the right people are at the table to make the decisions around future regulation for this industry.

Hon. Roy Cullen: On the point about being price takers, I know... I worked in the forest products industry—pulp, paper, lumber. You're price takers, and it's a commodity market, but what we looked at was this. We can't set the price. We have to focus on whether we're a low-cost producer. What's our threshold in terms of return on investment, return on assets? And frankly, for the rest, who cares? You can't control the price, so you have to make sure that your bottom line, your cashflow, is sufficient.

Let me come back to another question. If there was a way to accelerate the development and deployment of these technologies that will recycle water better, that will help us capture and sequester carbon, what could the federal government do to help you accelerate that, and are the technologies close enough to get into the...? I've been around long enough to know that you can have an idea, but to get it actually working technically and feasibly in the field is another thing, and sometimes there's a huge lead time.

What is the lead time we're looking at? What are the economics for you, if it was a level playing field? And how could the federal government help?

Mr. Jim Carter: Maybe I'll have a go at answering that.

The federal government already is helping in some ways. One example would be through the National Research Council. We do a lot of work with them. We do work with the universities. We do work with our own research institutions. We do work with the Alberta Research Council on things like proper land reclamation techniques.

As an industry, we have a lot of effort under way to try to turn the wet landscapes into dry landscapes earlier than was possible in years gone by. We've made a lot of headway with that now by consolidating the fines in the water itself so that they sink to the bottom and we can reuse the water faster. Just to give you an example of that, at Syncrude we now consume two barrels of water —not five or six or seven or eight—to make a barrel of oil. That's down about 60% over the last five years.

We're obviously also recycling water. You probably heard that story yesterday, if Don Thompson talked to you. About 80% of our water is recycled. We recycle it about eighteen times in the process. So we're only really withdrawing make-up water for our processes, and that make-up water ends up reporting.... It's used for water cooling in our processes. In that process, it goes to atmosphere, or, if it ends up in the tailings, it gets evaporated—not all of it, but to a big extent—so it gets returned to the hydrological cycle.

Those efforts are really there to enable us to minimize the impact we have on the environment in that regard, and we're continuing to look for ways in which we can further enhance that. But I think the industry, through those associations that we already have, like those with the National Research Council and others, is able to handle that one.

We talked about CO_2 sequestration earlier on. I think the industry would probably say that in order for that one to happen, there needs to be a kick-starting of help from probably both levels of government to make it work. The federal government could participate in it and take a leadership role in making it happen.

● (1705)

The Chair: That does your time by three minutes, but perhaps Mr. Clarke wants to add something.

Mr. Tony Clarke: I just want to reaffirm the line of questioning you started out with.

A lot has certainly happened with these three companies, Syncrude and Suncor, in particular, if you take it from the early stages right through to the present time. They've done a lot of pioneering work. They've made a lot of technological breakthroughs, etc. But what's missing now is a framework in which to put this, a policy framework that is going to be able to deal with the issues both at the present time and in the future. That's why we feel very strongly that there needs to be that moratorium on new things happening, in order to take a look at what has happened up to this time, to take a look at what can be done with carbon sequestering, what can be done with regard to the reclamation process, and what can be done with regard to the water issues.

I have different figures from what we've heard from Mr. Carter on Syncrude. I don't dispute the fact that he has those figures, but the independent studies that have been done show a different picture. But that's another matter.

The point I'm trying to make is that we do need to put a policy framework over this, because we're dealing with the future of a big part of the country that has implications for the entire continent and for parts of the planet. It's extremely important that we not make the wrong mistakes on this. It is incumbent on the national government in this country, through this committee, to actually take that leadership and to put out a call, if you can, for a moratorium on future...and looking at what kinds of benchmarks need to be put in place, what kinds of measurements need to be put in place, and what kinds of evaluations are needed for where we go in the future on this.

Secondly, I have to say that it's all tied up with the question of an energy policy for the country. We can talk about the fact that, yes, we have all of this energy we're producing, all this oil and gas we're producing. We can talk about the fact that we're exporting it to the United States. But we have to also acknowledge the fact that we're importing a huge amount of oil. Up to 50% of our oil in the country is from elsewhere, particularly dealing with Quebec and the Maritimes. So there are some really profound questions of insecurity as well as security. Those questions affect us here in terms of our future energy, and we need to get a handle on them. I would argue that we need to strike at this moment, to take the time to do this and to invoke a moratorium that will allow us to come to grips with this, in order to put in place the kind of policy and strategy framework that's going to be necessary for future development.

The Chair: Mr. Ouellet.

[*Translation*]

Mr. Christian Ouellet (Brome—Missisquoi, BQ): Mr. Chairman, I am in agreement with Mr. Cullen, but I will be a little bit more precise. I am here addressing myself more particularly to the representatives from Syncrude and Suncor Energy Inc., since Mr. Seeley dealt somewhat with this issue a little earlier.

I would like, if possible, that the discussion not stray from the matter of my question, which relates solely to greenhouse gases. I am not talking about pollution, nor about the environment. I am talking solely about the greenhouse gases resulting from activities involving the oil sands. These gases, which amount to one tonne for every eight barrels of oil, will not stop increasing. This is what we were told yesterday. Contrary to what you stated earlier, the line on the graph does not shift: the more oil you produce, the more you produce CO2, carbon dioxide. Therefore, if you are today producing a tonne for every eight barrels, you will continue to produce a tonne for every eight barrels, because there is not much opportunity for change.

Therefore, what are the political signals that would be necessary to slow down and, eventually, reverse this trend towards an increase in the production of greenhouse gases?

To be even more precise, I would say to you that we would not want to impose upon you an economic deterrent, as Mr. Harris so rightly stated earlier, but as a government, as parliamentarians, we must find a way of limiting your GHG emissions, without at the same time reducing your production.

What measures could you suggest to us to bring about a change? These are measures that we will impose upon you, but you can tell us now what they should be. What should parliamentarians do in order for you to reduce your emissions? What measures would you agree to taking?

● (1710)

[*English*]

Mr. Jim Carter: Let me respond. I think I said earlier on—maybe I wasn't very clear—that we had reduced our energy consumption per barrel since 1990 by about 17%. Going forward, we would expect that in the foreseeable future we're going to see that virtually double, and we'll come down by another 17%. I believe there are probably other things we can do as we go forward. One of the things that has really been critical to the success of the oil sands industry is the whole issue of research and development and continuous improvement in everything we do. If you went back to the very early days, it cost over $30 a barrel to make a barrel of oil from the oil sands. We sure weren't going to grow this business if we hadn't had continuous improvement and figured out how to get those costs down. Part of getting the cost down was also getting the energy consumed in our business down as well. That's why we've been able to drive it down by this 17% that I'm talking about.

We've done it through a whole host of things. We've done it, as I mentioned earlier, by implementing new technology, mixing the oil sand with water, reducing the temperatures of those processes. We're not conveying the oil sand anymore; we're putting it through a pipeline. It's more energy efficient to transport it that way. We've gone from 170-tonne heavy-haul trucks to 400-tonne trucks. The fuel burned per tonne kilometre on those trucks is less than two-thirds what it used to be for the 170-tonne trucks.

So we have less fuel consumed in mining, we have less NOx emissions made, and we will continue to do that as we go into the future. So on a per-unit-of-production basis, we will continue to reduce energy consumed.

If you're talking about an absolute reduction, that means you don't grow the business. Absolute reduction would mean that we do not grow the business.

Mr. Mark Shaw: Consistent with Mr. Carter, I challenge your view that we can't improve how much energy we use and how much greenhouse gas we create for each barrel of production. We firmly believe we can. We have done that and will continue to do that.

We strongly encourage the federal government to help. You already help with incenting technology, so please continue to do that. If you find ways to do that more, we certainly agree. We're very much driven to improve technology. We believe that will also make a difference.

Suncor also invests in alternative energies—I mentioned wind and biofuels. We believe that greenhouse gas is a world problem, and we look to market mechanisms. Canada can't solve this problem for the world. To do so would have a huge economic and social impact on Canada. We look for ways that Canada can contribute to solving this world issue in ways that are best for us and others.

There are market mechanisms that have been suggested in many of the greenhouse gas forums, like perhaps investing in technology in another country. What about investing in reforestation in other countries? We hugely respect the responsibility you have on behalf of Canadians, and we think it's important that as the federal government and parliamentarians you remind yourselves that greenhouse gas is a problem that cannot be solved solely in Canada.

● (1715)

[*Translation*]

Mr. Christian Ouellet: Yesterday, Mr. Thompson told us that greenhouse gases, carbon dioxide, CO2, were constant at 0.12 tonnes per barrel, and would remain at that level no matter what you do. It has been the same thing for years, and it is horizontal. It is not by doing research that we will change the situation.

Earlier, Mr. Seeley invited us to consider something that to my mind might serve as a springboard for you. If you had been forced to buy—I am giving somewhat of an interpretation here—the equivalent in tonnes of carbon, you would have had an economic lever. You either buy this carbon at $40 a tonne, which amounts to $5 a barrel, or you take the 100 million dollars needed to build the pipelines, etc., and you use them to send these gases into the ground. You need us to give you a little push in order to do this.

Mr. Cullen helped us understand this earlier, and rightly so. It is not just a matter of economics. You make enough of a profit to do that.

What must the government do to incite you to do that?

[*English*]

Mr. Jim Carter: I think we may have answered this question earlier, unless I'm mistaking what you are saying.

Mr. Christian Ouellet: You must be, because I didn't get an answer yet.

Mr. Jim Carter: I think what I said, and I may be corrected, is that for things like sequestration we need some support from governments to kick-start that notion and to develop the technology, the transportation systems that are necessary, and get some mechanisms in place that make it advantageous for conventional oil producers to use carbon sequestration as a way of enhancing their oil recovery. If we do that and put it together in a package, then it would start to get attractive for the industry to pursue and follow.

We've been studying this. It's not new, and it's not an idea we're just sitting back and waiting for someone to do something on. We've been studying it and working on it at the Alberta Chamber of Resources level, and it's going to take that kind of support from both levels of government to make it happen and to move it forward.

Can I just make one other comment? There's an important point here that we need to take into account. One way of reducing the CO_2 emissions from the oil sands would be to sell bitumen only and not upgrade it. It's on the upgrading side where we make most of our CO_2. We take natural gas and we knock the carbon out of it; we take the hydrogen and use it in converting the heavy oil into light oil that we send to market. We add value to it by doing that. This is where we get the value-added from the upgraders.

Our expansion, which you witnessed yesterday, was an $8.5 billion capital expenditure, and $1.5 billion of that was directed at environmental initiatives. One of them was to reduce our SO_2 levels. Nobody has asked about SO_2 today, but we've reduced that dramatically. We've added 100,000 barrels a day of crude oil production and we've reduced our SO_2 on an absolute basis by fifteen tonnes a day.

We've also improved that product so it's more amenable to refineries to meet the California diesel spec. The California low sulphur diesel spec requires a better crude oil going into the upgraders or into the refineries to do that. We've upgraded the product we make at Syncrude so that the refineries that are trying to make California diesel have a better chance of doing that. When we do that we make more CO_2.

I guess we could avoid making the CO_2 by not trying to satisfy that requirement or by shipping a lower-grade product. We've taken the position that we don't want to pipeline those jobs down to the United States, because that's essentially what we'd be doing.

● (1720)

Mr. Mark Shaw: There's one more piece I'd like to say, sir, if I could.

One of the things we recognize, and it's why we're working cooperatively with the provincial government and the federal government on the CO_2 capture and sequestration network, is if we were to do it just for Suncor, the pipeline that I would build would not satisfy these two gentlemen or their companies. That may or may not create a competitive advantage for us; it depends on how you look at it.

It would certainly be an added cost, but we would then deal with a solution that would not be the best for the country or for the province, because I won't build a pipeline. This is not a money-making venture; it's a net cost added to us. That's why we believe it's important that from an industry perspective, if we're going to be able to do this, we need to do it in a responsible manner and build one pipeline, not five or six. That's one of the concerns why this needs to be done cooperatively with governments as well as industry.

[*Translation*]

Mr. Christian Ouellet: You are telling us that to be responsible, you are shovelling the cost over into the government's yard. If it pays you, you will take the money, but you do not want your profits to drop. And what is unbelievable is that you are producing a superior product that you can therefore sell for a better price, but you do not want to cut into this product in order to reduce greenhouse gases. It seems to me that there is something missing here. You no longer are like the investors of yesteryear, who were people who felt a responsibility towards society. If the government does it, then fine, but if you are forced to do it and to incur a slight reduction in your profits, then you refuse. This is unfortunate.

[*English*]

The Chair: I'm not sure that was a question, but it is over time. I probably should give you time to rebut that, but I'm not sure it's required.

If you could be brief, Mr. Carter, thank you.

Mr. Jim Carter: I would say we are being responsible. The amount of money the oil sands industry in Alberta pays to the Government of Alberta in the form of royalties and what we pay in taxes, payroll taxes that go to both levels of government...that's responsibility.

[*Translation*]

Mr. Christian Ouellet: It is a tremendous responsibility vis-à-vis your children.

[*English*]

The Chair: I think that's a philosophical question we're not going to resolve here today, no matter what the answers.

Mr. Allen.

Mr. Mike Allen (Tobique—Mactaquac, CPC): Thank you, Mr. Chair.

I want to thank you for hosting yesterday. It seems to me we used just about every conceivable means of transportation to get around the site, except for the bicycle that we saw him driving. It was very good, and it was enlightening for me, because we've asked a number of questions over the last number of weeks with people. It was really good to see. I commend you for the work that is being done there.

I want to ask two questions, if I have time.

Mr. Clarke, first, it was very enlightening for me to go there, and I see that the Polaris Institute document was presented to us by you and Mr. McCullum. Were you both up there to do this study, or who actually did the study?

Mr. Tony Clarke: Mr. McCullum was up there many times. I was up there part-time.

Mr. Mike Allen: Okay.

I'm a little bit troubled by some of the stats you gave when you started going through the ones for water. You said—and based on what we heard yesterday, I thought I had some clarification, but now I'm all confused again—somewhere between 4.5 to seven barrels of water, but we talked about 2.5 yesterday. Then there was a statement made about 66% of the Athabasca River, and I'm sure that's not quite what you meant, when in fact 4% of low flow—I think that was the number—is what we heard yesterday. That's a little bit confusing to me. Finally, you talked about tailing ponds being huge lakes. Well, that's not really true because you're driving on them out there now. Maybe you could kind of square that circle for me.

Mr. Tony Clarke: First of all, on the Athabasca River, I didn't say that 66% was being used. I said that government policy—this is Alberta—is to allocate up to 66% of the Athabasca River flows or sources to the oil sands development. I was making a comparison between 37% of all fresh water sources in Alberta being allocated for oil and gas development in general. I was saying that the Athabasca River is a huge amount of that; it is allocated up to that amount. That doesn't say it's all being used now—of course not; that's over a long period of time. I'm just saying that's the way I was using that figure.

As for the figures with regard to the barrels of water for barrels of oil, 4.5 is the average that the Pembina Institute had worked out. Other institutes have worked out—these are independent of the industry and independent of government—as high as seven, so that's why they range between 4.5 and seven.

Mr. Carter says they have it down to two barrels of water per barrel of oil, or something to that effect. I'm assuming that's for 2006.

● (1725)

Mr. Jim Carter: That's from 2005 to 2006. It was on the way in 2004.

Mr. Tony Clarke: Our figures from 2004 to 2005, again from independent sources, and again from the Pembina Institute, show that 6.2 barrels of water were being used by Syncrude for production of each barrel of oil. Obviously there are some differences of opinion there. Obviously there needs to be some sharing of the stats and where the stats came from, etc.

I'm sorry, what was the third question you asked?

Mr. Mike Allen: That was on the tailing ponds being huge lakes, when they're really not. We see a tremendous amount—18 times—the recovery of the water. We're seeing a lot of recovery of that water. Of course, we saw a lot coming out of the tailing ponds into the settling pond yesterday, and they're actually driving on these things now. The one situation they talked about was a recovery of the land, where there was going to be a man-made lake, if you will, which is going to be somewhere around fifteen or five metres deep or something like that, or whatever it happens to be. That was the one thing I saw that was a lake, but the tailing ponds were not. I guess I'm having trouble with the statement that these are all lakes, because they're not really.

Mr. Tony Clarke: I'm sorry. I may have used the word “lake” in the wrong sense there. I was talking about tailing ponds as if they were lakes. They're huge repositories of contaminated water that now need to be processed and brought back to life again, if they can be. We're hearing about new technologies that are being developed for that. I'm glad to hear that more progress has been made. I was there in 2005 and in 2004. Maybe more progress has been made in the last six or eight months.

Mr. Mike Allen: Okay.

I could ask more and more, but I'd like to give Brad a chance, because the time is almost up.

The Chair: We have a vote, so we're going to hear a bell in a second.

Mr. Trost, do you have a quick one?

Mr. Bradley Trost (Saskatoon—Humboldt, CPC): The one thing that hasn't really been addressed today is the big problem up there with human resources, getting enough people up there. The problem depends on which side of the philosophical line you are on, both inside and outside this committee.

From the companies' perspective, I'm very curious about what human resource programs have been most successful in terms of getting people up there with the necessary skills. We're going to have to make some recommendations, be they immigration or otherwise. We're talking about training and immigration. If there are programs that have worked, I'd like to hear about them, because we're going to make recommendations for things to change, etc., in order to help the human resource stresses up there. Coming from Saskatoon, I know it's spreading all throughout the Prairies.

Mr. Jim Carter: Maybe I'll take a stab at that, and others will want to jump in, no doubt.

Some of the things we've been doing for the last ten years we would want to continue doing, like the apprenticeship programs we have for training apprentices. We've been very successful in being able to hire aboriginal people. With you being from Saskatoon, you probably know that's a concern. It's a growing area of our population in Alberta, Saskatchewan, and Manitoba.

All of us in this industry have put a lot of things in place in order to hire aboriginal people and put them to work. They're all getting trades now and they're moving up through the system. Those are the kinds of things that will continue to be helpful. Anything the government can do to support advancing education in the aboriginal communities is a key point. We put in a requirement in 1985 to have grade 12 equivalent for our applicants at Syncrude, and all the others in the industry are doing that now. That has helped to elevate the education level of the aboriginal people and make them more employable.

Mr. Bradley Trost: I'm sorry to ask, but please give quicker, more general points, because we're coming up to a vote here.

Mr. Jim Carter: Okay.

The other one would be that immigration is something that is important. At Syncrude, we've been fortunate in that we've been able to satisfy our hiring needs within Canada for the most part, but with the growth in the industry going forward, we see that immigration is going to be a critical success factor to that.

● (1730)

Mr. Bradley Trost: Are there any particular programs that have worked or not worked? There are two other industry players here. Are there any other comments about what human resources recommendations you would make, for us to essentially make?

Mr. Rob Seeley: Mr. Carter has covered it.

Mr. Bradley Trost: Fair enough.

The Chair: Thank you, Mr. Trost.

Could I please get one clarification? Because of some of the questions Mr. Cullen was asking of officials and people we've met with along the way, two things occurred to me yesterday that sorted out my mind on this water question. I just want to clarify whether I'm correct on data that's a little bit older and current data.

There were two things. One was the comment you made in your remarks today about recycling the water. From some of the data we heard from Pembina and recent witnesses, it occurred to me that there was a likelihood that they were counting the same water twice in terms of the use of water in developing a barrel of oil, and that this is in fact recycled water. It's the same water used eighteen times, and it's counted by previous data eighteen times in measuring the amount of water you're using. It's all the same water. It's just used over and over again.

This has been more frequent recently because you've been able to use the water from the tailings ponds, since it has settled out now, whereas you weren't able to use that water for many years. It takes a while until you are able to use it. This is something that will change the perspective considerably, too, because you're able to recycle that water and use that water over and over for a lot of uses. Is that correct, or have I misunderstood things?

Mr. Jim Carter: I'm not sure how Pembina arrived at its numbers. All I can do is tell you about our numbers at Syncrude that are measured. We target to reduce the water consumption, and there's a really simple reason for that, quite frankly. It costs money to store water. We have to build these huge tailings storage facilities that have to be built on earth-filled dam standards, and it costs money to do so.

It's a little bit like the energy thing. It makes economic sense for us to reduce our consumption. I can assure you that I know what numbers we have done at Syncrude. We steward to those quarterly with all of my people, and it's just slightly over two barrels per barrel of synthetic crude oil that we make, and that's down by 60% from where it was five years ago. But I don't know how Pembina has calculated theirs.

The Chair: We have heard witnesses make that accounting several times, so that's useful, and I thank you.

We have beaten the bell today. We have a vote in House. The bell is ringing now.

I want to thank everybody for coming and for the amount of time you've given us in preparation for the meeting, and also for the questions. I think it's been very helpful for the committee, particularly after having gone and visited the site. The questions are becoming more relevant, and that puts a little more pressure on the witnesses. I thank all of you for coming today.

With that, we will adjourn until Thursday.

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