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Chair

Mr. James Bezan

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● (1535)

[*English*]

The Chair (Mr. James Bezan (Selkirk—Interlake, CPC)): I'll call this meeting to order.

We are broadcasting by webcam. We are working by video conference today and we're going to continue on with our study of the study of the oil sands and Canada's water resources, pursuant to Standing Order 108(2), and of course the motion that we passed earlier in the month.

Joining us by video conference in Calgary is Roger Gibbins, president and chief executive officer of the Canada West Foundation.

Can you hear me, Mr. Gibbins?

Dr. Roger Gibbins (President and Chief Executive Officer, Canada West Foundation): I certainly can, yes.

Can you hear me?

The Chair: Perfect. Yes, we can.

Also in Calgary, I believe we have Dawn Farrell, chief operating officer with TransAlta Corporation.

Is Ms. Farrell there?

Ms. Dawn Farrell (Chief Operating Officer, TransAlta Corporation): Yes, I am.

The Chair: Okay. Good.

And as an individual, from Edmonton by video conference we have Dr. David Schindler, professor of ecology at the University of Alberta.

Dr. Schindler, you can hear us?

Dr. David Schindler (Professor of Ecology, University of Alberta, As an Individual): Yes, I can.

The Chair: And we have as well Mr. Graham Thomson, who's a journalist.

Can you hear us, Mr. Thomson?

Mr. Graham Thomson (Journalist, As an Individual): Yes.

The Chair: We're all set to go. I do remind witnesses—I know you've been told—to keep your opening remarks to under ten minutes, and then we'll go into our question and answer rounds.

If you could kick us off, Mr. Gibbins, we'd appreciate that.

Dr. Roger Gibbins: I'm happy to do so.

I should point out at the outset that I am not a David Schindler. As my in-laws pointed out, I'm not a real scientist; I'm a political scientist. But I've been fairly heavily involved in water policy work within Alberta, so I would like to take a few minutes to establish some contextual factors that you may want to keep in mind as this conversation unfolds.

First of all, for those of you who are on the committee and not from Alberta, there is a very fundamental divide in the province between north and south when it comes to water issues. In the south, where the bulk of the population is and where the oil sands are gone, water quality is not a big issue, but water supply and potential shortages of supply are in fact very big issues.

We have river basins to the south that are essentially tapped out, and we also have interprovincial issues in the south as the water flows out of Alberta into Saskatchewan and Manitoba. The south is a basin consumed by supply issues, whereas the northern part of the province has few people and lots of water, so it's a different environment.

Supply issues in the north tend to be a seasonal issue, not an overall issue, so when we get into late summer there are issues in terms of the withdrawal of water for oil sands. Unlike the south, water quality is a big issue. A lot of focus is around the potential impact of the oil sands on water quality, and there's more of a concern about downstream communities and the effect on downstream communities. In the south, the impact is on the supply of downstream communities, not on the quality of water. You just want to keep in mind that Alberta has two very distinct water communities.

The second point I will make is that the water issues surrounding the oil sands are, in many ways, easier to deal with than the greenhouse gas issues around the oil sands. The intensity of water use has been going down over time. There's been a lot of technological change. There's a lot of recycling that's used in the oil sands development and the increasing use of brackish water. And finally, on the tailings ponds, which we know so well through ads, here again is a use of water that is probably going to be technologically obsolete within the foreseeable future. The water issues surrounding the oil sands are ones in which there's a lot of activity going on and the problems are less intractable than they are when we come to greenhouse gas issues.

The third point, and next to last point, is that public opinion polling in the province and in the country at large suggests that water issues will trump concern over greenhouse gas issues for the Canadian public. We've seen a waning interest in global warming that has not eroded public interest in environmental issues that we can see, touch, and feel. So water remains a pretty important and sensitive issue on the public policy landscape.

The last point I will make is that within Alberta, water policy has been a matter of intensive development for the past half decade now. Alberta put into place the Water for Life strategy, and we're now working on putting in a land use framework strategy that's built around a lot of water concerns. So although you may not want to argue that we've got everything right in the province, this is not a policy backwater by any means, as Alberta and British Colombia probably have the most aggressive policy approach to water.

So when I look at water issues in the province, I don't see a lot of big holes that other governments might want to step into. This is an area of very active policy creation, of very active policy deliberation, which again is not to say that we necessarily get it right, but it's certainly very much on the table.

With that, I'll pass on to my colleague.

The Chair: Thank you, Mr. Gibbins, and thank you for keeping your opening remarks brief.

Ms. Farrell, if you can take the floor now, we would appreciate it.

Ms. Dawn Farrell: Thank you.

Thank you, members of Parliament, fellow panellists, and other guests. Good afternoon. We really thank you a lot for this opportunity to talk about our CCS project here today.

For those of you who may be unfamiliar with TransAlta, we are Canada's publicly traded power generator and wholesale marketer of electricity. We have power plants in every province, from British Columbia to New Brunswick, with the exception of Manitoba. We also own and operate power plants in the United States and in Australia. In total, we have 185 plants and 10,000 megawatts of capacity, which makes us about the same size as BC Hydro.

We're celebrating our 100th year this year. We started out as a hydroelectric power producer, moved into thermal generation, and in the last 15 years have developed extensively in renewables. It may surprise you to know that TransAlta is Canada's largest wind developer and that more than 22% of our fleet is from renewable sources.

Our growth strategy is exclusively focused on clean energy, both in renewables such as wind, hydro, and geothermal, and in clean fossil technologies, such as CCS with Project Pioneer, which is what I'm really here to talk to you about today.

Project Pioneer, for those of you who don't know, is a partnership of private industry and government and will be one of the most significant initiatives on CO_2 in the next decade in Canada. It's designed to preserve the economic value of our vast natural resources; it will advance Canada's reputation as a developer of clean energy solutions and it will actually reduce CO_2.

Just as an aside, we are really pleased to have the Government of Canada as a partner in this initiative. With five major CCS projects currently in development in Canada, we believe our country is leading the world in developing the G-8 target of 20 CCS projects around the world by 2015.

By 2015, Project Pioneer will be amongst the largest, fully integrated CCS systems in the world. We will build it to retrofit to our Keephills 3 coal plant, and it will use the chilled ammonia process to capture and permanently store a million tonnes of greenhouse gases per year.

The first stage of Project Pioneer will be to store the captured CO_2 in several deep wells in a geological formation next to Keephills. We will inject the purified CO_2 underground more than two kilometres deep through drill sites identified in conjunction with the Wabamun Area CO_2 Sequestration Project, or WASP study, headed by Dr. David Keith of the University of Calgary. We expect this stage to last at least two years.

The second stage of Project Pioneer will stop geological sequestration and instead transport the captured CO_2 via pipeline to mature oil fields about 70 kilometres away for enhanced oil recovery.

The benefits of the project are both environmental and economic. On the environmental front, I'd really like to stress that a million tonnes of CO_2 will be annually sequestered from the coal plant, which is equivalent to removing 160,000 cars from Canada's roads every year. In addition, the capture will reduce SO_2 emissions and particulate matter by about a third of what they are today.

On the economic front, Wright Mansell Research has estimated that over the life of Pioneer, it will increase Alberta's GDP by $2 billion to $3 billion; increase labour income by about $675 million; efficiently extract an additional 22 million barrels of oil production from existing oil fields in Alberta; increase federal, provincial, and local government revenues by between $259 million and $1.2 billion; and add 8,800 person-years worth of employment.

As I have mentioned, Pioneer's disposal plan for the captured CO_2 will be to inject a million tonnes annually underground, first into permanent geological storage and then into mature oil fields.

As the Integrated CO_2 Network has concluded, EOR can be an economic catalyst to advancing CCS projects across Canada, particularly in Saskatchewan, Alberta, and British Columbia.

However, over time, the expected amount of CO_2 to be captured in Canada will greatly exceed what can be developed for EOR, so eventually some of it will have to be sequestered in geological formations.

Fortunately in Canada, a number of geological formations hold promise for secure, long-term storage of CO_2. Direct storage at these locations will be necessary to handle the large volumes of CO_2 associated with capture over the longer term. These locations include depleted oil and gas reservoirs, deep and uneconomic coal formations, and deep saline formations. Deep saline formations can be found in various areas of western Canada several kilometres below the land surface and geologically separated from ground water sources, which I think is of interest to the committee today.

● (1540)

Specific injection sites for Project Pioneer will be determined in conjunction with the pre-existing WASP study. This study—of the region in the immediate vicinity of our Keephills plant—recently concluded: storage capacity for CO_2 is conservatively estimated to be 250 million and 400 million tonnes; seismic analysis indicates no faulting in the study area; and an estimated 34% of the CO_2 dissolves within the first year of storage, while 56% of the CO_2 will be dissolved after 50 years.

The CO_2 is initially trapped primarily by physical means below capped rock. Over time, there are additional chemical mechanisms to immobilize the CO_2 to prevent any potential release. For example, the sequestered CO_2 will mineralize with the rock, be trapped in small pores of the permeable rock, and dissolve into water trapped deep within the formation. We will use the study's findings plus additional seismic investigation to locate test wells within underground formations near Keephills. Our plans are to drill several three-kilometre-deep test wells to establish injection capability for the full rate of 3,000 tonnes per day, which turns out to be a million tonnes per year for Pioneer.

I just want to talk for a minute about the safety of underground storage. CCS includes a mixture of both proven and emerging technologies. What is exciting about Project Pioneer is that it fully integrates both those proven and emerging technologies on a large scale. It will be the first large-scale project of its type in the world when it's finished. Our project will include a full range of capture, transportation, and storage of CO_2. You all know that CO_2 transportation via pipelines for EOR has been under way in Canada and the United States for a decade. You probably are familiar with the Cenovus project in Weyburn, which has been often talked about in this context.

CO_2 storage is used in a number of countries and has been extensively studied as to the integrity of the chosen geological formations to ensure that no leakage occurs.

In Canada, the geological formations being considered as likely candidates for long-term CO_2 storage have already proven safe for storing other gases and liquids. These same formations have trapped crude oil and natural gas underground for millions of years. The formations consist of layers of permeable rock capped by a thick layer of impermeable rock. While the gases and fluids can pass through or be stored in the pores of the permeable rock, they cannot move up past the impermeable rock. It acts as a cap. As a result, any CO_2 injected into the permeable formations remains trapped there.

The Petroleum Technology Research Centre recently conducted a risk assessment process in 2004 to evaluate the long-term result of CO_2 injected into the Weyburn reservoir. In a case study, 4,000 parameter combinations were evaluated and the results indicated that after 5,000 years there was a 95% probability that 98.7% to 99.5% of the initial CO_2 in place will remain stored in the geosphere for 5,000 years.

Across western Canada there are about 40 sites where acid gas—a combination of hydrogen sulphide and carbon dioxide—is currently being injected into deep underground formations for permanent storage, and this has been going on for decades. Right now, about two million tonnes of acid gas are injected and stored underground every year. This is a perfect analogy for CO_2 geological storage.

According to the Alberta Geological Survey, incidents have been rare and minor and have not resulted in leakage of acid gas into groundwater or the atmosphere. As opposed to hydrogen sulphide, it is important to note, carbon dioxide is not toxic, is not hazardous, and is not flammable. This proves a scientific basis and a proven track record for the safe injection of CO_2 underground, and this is how Project Pioneer will proceed—safely, or not at all.

I know I'm running out of time here, so I'll just take a minute here to talk about our monitoring, because I think it is quite important to understand.

As for all human activities, there are always risks involved. Project Pioneer will employ a highly competent and experienced team of subsurface geoscientists who will make use of all available data to ensure that the formations recommended for CO_2 sequestration have the necessary features to ensure they will serve as safe, long-term containers for CO_2 storage. There will be additional safeguards recommended for any ongoing CO_2 sequestration, and these will all be managed through a properly designed monitoring, measurement, and verification program.

● (1545)

I've just got a couple of minutes left here. Do you want me to continue, or do you want me to wait—

● (1550)

The Chair: Actually, your time has expired, but I'll check with the committee if they want to hear the rest of it.

No. Okay, we do have your comments here in circulation, so they can refer to your conclusion starting on page 15 in English. We'll thank you for that right now, Ms. Farrell, and you can add to it during the question and answer round.

Ms. Farrell: Okay, thank you.

The Chair: With that, we'll move onto Dr. Schindler. You have the floor.

Dr. David Schindler: I have a slide projection I'd like to make.

I'm going to start with our study that was set up to examine the claim of industry and the Alberta government that no pollution from the oil sands industry gets into the Athabasca River. After seeing sights like the one shown here, and this one, and having studied watersheds for 40 years, my guess was that these claims were erroneous.

Also, the last time RAMP was reviewed, the program was found to be totally wanting. We thought it was worth having an independent study. So what we did in this study was to first use GIS to map the McMurray formation, which is the bitumen-laden formation shown in the lightest colour here, and we sampled at every site that you see on the map, several down the length of the Athabasca, slightly above Fort McMurray to Fort Chipewyan, and then on every tributary upstream.

The first thing we did was sample snow. This was the entire winter's accumulation. We sampled it at 31 sites. We did this because there has been no airborne monitoring in the Athabasca area since 1981—at least that's been reported.

So here is a profile of snow. You can see the black layers in it. We filtered the snow, and this array is from Fort McMurray on the left to Fort Chipewyan on the right. Each of the little side branches represents a tributary.

These are the particulates on the filter after filtering 900 millimetres of snow water, indicating how much particulate was in the snow.

This shows the melted snow at impacted sites. It actually had an oil layer on top of the water after it was melted. We found that airborne contaminants were detectable for a 50-kilometre radius around the two upgraders near our site AR6, as shown here.

If you look at the patterns going downstream, AR6 is again the upgrader location. You can see high contamination of polycyclic aromatics, including several known carcinogens, near that centre of activity and also at the bottom of the impacted tributaries.

We saw the same thing for every toxin we looked at: mercury, arsenic, lead, you name it. When we looked at the amount that these were elevated in the snow—both in particulates in the snow and dissolved and in tributaries and in the water of the Athabasca rivers—we found that every one of these toxins was elevated. They're elevated above background even as far down as Lake Athabasca.

Our data agreed with the Environment Canada National Pollutant Release Inventory. I'll just show you three, but probably all would be the same. Mercury emitted from these plants has increased three-fold in seven years, lead has increased four-fold in six years, and arsenic three-fold in six years as well. All of these contaminants are being spewed into the atmosphere, which the companies are reporting to Environment Canada. This is why we are seeing these elevated concentrations in snow and in the river water.

We also found high concentrations of several contaminants—that are known to be high in the tailings ponds—under ice at sites that are just downstream of tailings ponds. This indicates that there is some effect of tailings pond leakage under winter low flow conditions.

So we conclude from our results that their industry is adding substantially to the contaminant burdens of the Athabasca River by both airborne and waterborne pathways. All thirteen elements on the U.S. EPA's priority pollutant list were higher within a 50-kilometre radius of the upgraders on the river. Environment Canada's NPRI emissions data indicate that these same elements are being spewed into the air in increasing amounts.

The oil sands industry is making these reports to Environment Canada, but it's not what they are claiming to the public. This is shown in these various myth buster full-page ads that have been running in newspapers across Canada. Their claims about contaminate release, water use, and reclamation are simply not true.

So our evidence and that from the NPRI indicates that oil sands companies should be charged under the Fisheries Act. Clearly they're discharging deleterious substances into fish-bearing waters. One wonders where the enforcement of this act is.

● (1555)

I think this monitoring program carried out by RAMP is totally incompetent, as the reviewers of the program in late 2004 already concluded. I think a lot of public trust has been lost.

The only agency with the expertise to carry out a decent monitoring program is Environment Canada. I think given the lack of public trust, there should be an oversight panel of scientists not connected with industry and not susceptible to muzzling by government to help regain public confidence. There should be annual public reports that are made widely available. Industry should continue to pay for the program, but it should not be run by industry.

We have restrictions on airborne and waterborne pollutants from power plants. These are comparable, and in many cases increasing to what we see from large power plants. Clearly some additional restrictions are in order. It's time we had some hard goals for reclamation of mines and tailings ponds and watershed protection.

That's all I have. Thank you.

The Chair: Thank you, Dr. Schindler.

We'll continue on with our final witness.

Mr. Thomson, you have the floor.

● (1600)

Mr. Graham Thomson: I'm sorry. We have no audio. I can see you, but I can't hear you.

So I'll just go ahead?

The Chair: Yes, please.

Mr. Graham Thomson: Thank you for inviting me to appear today. I too am no David Schindler, not even a Roger Gibbins. My name is Graham Thomson and I'm a political columnist with the *Edmonton Journal*, but today I'm speaking to you perhaps more as the author of a research paper on carbon capture and sequestration that I wrote for the University of Toronto. I was given a journalism fellowship from the Canadian Journalism Foundation for the 2008-09 school year, which led to an invitation from the Program on Water Issues at the Munk Centre for International Studies to write a paper. It's called "Burying Carbon Dioxide in Underground Saline Aquifers: Political Folly or Climate Change Fix?"

The paper was presented at the U of T last September at a daylong symposium on carbon capture. I did not focus on Alberta's oil sands projects because it would appear the oil sands are not a good candidate for carbon capture and sequestration. Here is an excerpt on CCS and the oil sands from my paper, so I'm quoting myself:

> A cautionary tale can be found in Alberta's oil sands that initially looked to CCS as a way to mitigate the industry's huge carbon footprint. With CCS, Premier Ed Stelmach was proud and optimistic that he had found a way to green the tar sands and improve his province's battered environmental image. "Alberta believes CCS can help ensure the economy and the environment both thrive in the 21st century. That is the backbone of Alberta's position–a pragmatic approach that will allow us to continue to make a significant contribution to the Canadian economy while at the same time protecting the environment."

However, oil sands companies have backed away from CCS, realizing the technology will likely not help the industry reduce CO_2 pollution because the oil sands have too many diffuse emission sources. The Canadian Broadcasting Corporation obtained internal federal briefing notes that explained that CCS is better suited to large, single-point industrial sources of CO_2 such as coal-fired plants. To quote, "Only a small percentage of emitted CO_2 is 'capturable' since most emissions aren't pure enough," the notes say. "Only limited near-term opportunities exist in the oil sands and they largely relate to upgrader facilities."

Despite this, the Alberta government insists CCS will somehow help the oil sands in a significant way. The government's assurance that 140 million tonnes of CO_2 will be sequestered each year requires explanation. Even a firm supporter of CCS has his doubts. "I don't know where they got that 140 number from," says David Keith from the University of Calgary. "If we have climate change we cannot keep taking oil out of the ground and putting it into the air."

Thus far, CCS has failed to deliver on its promise to the oil sands, despite the optimism and enthusiasm of politicians and industry leaders. And the Alberta government is learning that CCS projects are more difficult to get off the ground than first thought. Here's an addition. Since my paper was written, the Alberta government has announced letters of intent for four CCS-related projects: The Pioneer project, headed by TransAlta to sequester one million tonnes a year from a coal-fired plant; the Swan Hill Synfuels project to sequester 1.3 million tonnes a year; an Alberta Carbon Trunk Line; and the Quest project, headed by Shell to sequester 1.2 million tonnes a year from the Scotford upgrader. There is no guarantee all these projects will go ahead, and if they do, the target date to start sequestration is 2015.

Looking at the Quest project, the plan is to capture up to 1.2 million tonnes of carbon dioxide a year from the upgrader near Edmonton, compress the carbon dioxide into a fluid, transport it by pipeline to a yet-to-be determined site, and inject it more than two kilometres underground into a saline aquifer, a sponge-shaped rock formation filled with salt water.

On paper, the pilot project is an ideal carbon capture and sequestration model. It will be well funded, moderately scaled, carefully selected, closely monitored, and it will inject the carbon dioxide deep underground into a geological formation unmolested by a drill bit. If you're going to isolate carbon dioxide from the atmosphere, this, in theory, is how you're supposed to do it.

However, Shell and its project partners reserve the right to use the captured carbon dioxide for enhanced oil recovery. That means injecting the fluid gas into old oil fields to force out more oil that is then refined and burned, producing more emissions of carbon dioxide. Using CCS to recover more oil arguably makes sense economically, but calling enhanced oil recovery pure "carbon sequestration" in the context of massively reducing global emissions is, environmentally speaking, an exaggeration.

● (1605)

Then there's the issue of trying to store millions of tonnes of highly pressurized carbon dioxide in old oil fields that are punctured by old oil wells. It's called the pincushion effect and it could create leaks of carbon dioxide into groundwater or into the atmosphere. The former could leach elements such as arsenic into the groundwater sources of drinking water. The latter could be a health threat in large enough quantities, but even small amounts over time could undo any climate change good done by sequestration in the first place.

Scientists studying carbon sequestration have high hopes for its safety and effectiveness but cannot, at this point, give us any long-range assurance, especially if we go large scale.

Alberta says it will use carbon sequestration to bury 140 million tonnes of carbon dioxide a year by 2050. The federal government wants to bury 600 million tonnes annually by the same year. Worldwide, the plan is to inject billions of tonnes underground each year.

Politicians are making promises for the technology that scientists and the energy companies don't know they can keep.

That's my presentation. Thank you very much.

The Chair: Thank you very much, Mr. Thomson.

We're going to go to questions now.

[*Technical difficulty—Editor*]

I'm going to suspend the meeting while we get this rectified.

● (Pause)

●

● (1615)

The Chair: We're back in session. The video conferencing is working.

If we lose the video conference link again, we will do this by teleconference, so that we can complete our questioning.

With that, we are going to go with our seven-minute round.

To kick us off, Mr. McGuinty, you have the floor.

Mr. David McGuinty (Ottawa South, Lib.): Thank you very much, Mr. Chair.

I'd like to begin by asking Dr. Schindler if I have his testimony right.

Dr. Schindler, I am going to summarize very quickly.

You said, first of all, that your data agrees with Environment Canada data with respect to the NPRI, the last numbers being 2008, I believe you said. Then you said the oil sands companies should be charged under the Fisheries Act. Then you said Environment Canada should take on a proper monitoring program, because RAMP is not trustworthy, given that it is industry funded. You said that advertising by industry is misleading. You said there is recent evidence of federal scientists being muzzled. You also said that you need an oversight panel of scientists not linked to industry or government, and then you said hard goals for reclamation of mines and tailing ponds are required.

Is that pretty much, in a nutshell, what has to happen in terms of improving the situation in this balance between the exploitation of the oil sands and the natural environment around it?

Dr. David Schindler: With respect to water pollution, yes. That's one of several aspects, though.

Mr. David McGuinty: Dr. Schindler, has the evidence that you have put forward in this report, updated from May 12, 2009, been accepted by Environment Canada or by government scientists across the department?

Dr. David Schindler: One of the reviewers of the one that was published was a senior scientist with Environment Canada.

Mr. David McGuinty: And have you had a response from the minister, for example, or from the department in terms of how it intends to proceed with this evidence now in front of them?

Dr. David Schindler: No. I'm told by my colleague that it's under consideration right now, and they're expecting at least to be able to upgrade their monitoring, which in recent years has been pathetic, to put it mildly.

Mr. David McGuinty: So, Dr. Schindler, I guess we can take it then that you've lost complete confidence in the CEMA process. Is that right?

Dr. David Schindler: I wouldn't say that I've lost total confidence in CEMA. I certainly have in RAMP. CEMA seems to have a spotty future. They have been some good reports and some bad reports. Some of them, like the 2009 one, actually include some of the NPRI data, though one wonders why I can get 2008 data and why they, in reporting a week earlier, could only get through 2006.

Mr. David McGuinty: So, Dr. Schindler, you're calling for a much more enhanced federal role in both monitoring and the enforcement of existing federal statutes around the oil sands with respect to water.

Dr. David Schindler: Yes, I am.

Mr. David McGuinty: Have you had a reaction from the Alberta government with respect to that call for enhanced federal presence in enforcement?

Dr. David Schindler: I don't expect it would be a good call.

Environment Canada clearly has the responsibility under the Fisheries Act, and I think it should be up to them to go in and enforce it.

Mr. David McGuinty: So far you're still waiting for an answer or some kind of response from Environment Canada to your evidence in your research.

Dr. David Schindler: I know it's accepted by the scientists because I've talked to several of them. I haven't heard anything from higher levels in Environment Canada.

Mr. David McGuinty: Can you give us an idea of what you mean by harder goals? Perhaps you mean more onerous targets for reclamation of mines and tailing ponds.

● (1620)

Dr. David Schindler: I would say some actual deadlines by which reclamation might be done. I drive by the TransAlta coal-fired power plants every day on my way home, and there is nothing but a little slit that's being mined there, with reclamation within a year or two behind the actual mining. I would have thought the oil sands should be held to something similar.

Mr. David McGuinty: Dr. Schindler, the government has brought in new environmental enforcement measures. This committee worked together on those measures, including enhancing fining, more environmental prosecutions, and so on.

Can you give us an idea of what you mean? Perhaps you are not in a position to say so, but I'll ask you anyway. What do you mean that oil sands companies should be charged under the Fisheries Act?

Dr. David Schindler: Well, subsection 36(3) says clearly that no deleterious substances shall be discharged to fish-bearing waters, and Environment Canada is responsible for enforcing that subsection of the Fisheries Act. I don't know, given the evidence that we have and that they have in their NPRI database, why they're not doing it.

Mr. David McGuinty: Is this something that has been going on for quite a long time, Dr. Schindler?

Dr. David Schindler: It has.

The most recent airborne monitoring in the oil sands was done by AOSERP in 1978 and 1981. If we match our particulate emissions with theirs, they have roughly doubled, which means that industry has put out to the air less per barrel of oil mined, because they've increased much more than double. But it means that we've known this was happening since the late 1970s.

Mr. David McGuinty: Finally, Mr. Thomson, the thing that struck me most about your testimony is that CCS, according to what you've written, does not apply most appropriately to the oil sands but instead to coal-fired plants. I just learned that the U.K. government is considering making it mandatory that any new coal-fired plant actually have a CCS installation constructed beside it.

I guess the conclusion to draw from your testimony, finally, is that CCS is not anything like the panacea that different governments, industry, and other folks are claiming it to be. Is that right?

Mr. Graham Thomson: Yes, but my conclusion would be that there's a big gap between what we know now and what we can say in the future.

We're hearing governments say—Alberta's, for example—that we will be sequestering 140 million tonnes by 2050, but there's no scientist that I've found saying that with any authority. We don't know that we can do large scale. And certainly there's a big question mark regarding the oil sands, because ideally you need a large, single point source, such as a coal-fired plant. The oil sands don't lend themselves well to carbon capture, so that's one reason.

It's the cost as well. Even if it were proven that this could be done safely at large scale, there's also a cost involved. In Alberta alone it could be $14 billion a year by 2050. That's according to Andrew Leach with the University of Alberta.

The Chair: Thank you very much. Time has expired.

Mr. Bigras.

[*Translation*]

Mr. Bernard Bigras (Rosemont—La Petite-Patrie, BQ): Thank you, Mr. Chair.

First, thank you to our witnesses. My first questions will go to Ms. Farrell, from TransAlta Corporation.

The ecoENERGY Carbon Capture and Storage Task Force estimated that three-quarters of Canada's greenhouse gas emissions could be captured and stored.

I would like to know, Ms. Farrell, if you agree with the conclusions of this task force.

[*English*]

Ms. Dawn Farrell: I am not familiar personally with that task force. I don't know whether any of my colleagues is. TransAlta participated in that task force. I would imagine that the work we did on it would have substantiated this by looking at the various power plants and at who had possibilities for sequestration formation under their power plants. Then, that would have—

An hon. member: So you think it's feasible.

Ms. Dawn Farrell: Yes, it's feasible.

● (1625)

[*Translation*]

Mr. Bernard Bigras: It's feasible, but how do you reconcile your statement with that of Mr. Thompson who claims, with regard to Alberta's oil sands, that capture and storage programs cannot be applied? There did not seem to be a consensus. Don't you think that you are somewhat overestimating the carbon capture and storage capacity with regard to CO_2 in Canada? Do you agree with the three-quarters estimate, because I find that somewhat paradoxical?

[*English*]

Ms. Dawn Farrell: What I can say is that for carbon dioxide to be sequestered, I agree that if there is a large point source such as a coal plant, and if that coal plant is sitting over a formation or is close to an EOR or enhanced oil recovery facility, there is a significantly higher probability of getting the CO_2 out of the flue gas and either sequestering it in the formation under the coal plant or moving it to an EOR facility. To the extent that we have a number of those kinds of coal facilities—particularly, if you look in Alberta, all of our coal plants that are up west of Edmonton sit over those geological formations and are close to enhanced oil recoveries—we have quite a high potential for sequestering CO_2.

As to the point about the oil sands, I agree that CO_2 sequestration could be more difficult, if the CO_2 sources are more disparate. But certainly if you're looking at coal plants, and particularly if you're looking at the coal plants in Alberta, and particularly if you're looking at the project we presented, you have a very high probability of sequestering CO_2.

[*Translation*]

Mr. Bernard Bigras: In 2006, the oil sands were producing 1 million barrels per day and by 2015 it is estimated that this output will rise to 4 million barrels of oil per day. You boasted about the hydroelectric projects in your region. I am sure you are aware of an agreement that was signed between Atomic Energy of Canada and Energy Alberta Corporation to produce more energy, not necessarily from hydroelectricity, but rather using nuclear power.

I would like to know whether your company is aware of and participates in pilot projects intended to produce more energy not necessarily through hydroelectricity or other forms of renewable energy, but rather through nuclear power.

[*English*]

Ms. Dawn Farrell: TransAlta is not participating in pilot projects on the nuclear side. The nuclear power industry uses a very specific set of skills and attributes, and it is not something that TransAlta would have experience in. If you look at how our company approaches CO_2, we approach it relative, first of all, to CCS with coal, which we talked about today with Project Pioneer; second, we have a thousand megawatts of wind generation across the provinces here in Canada, so we develop wind farms; third, we have, as you've mentioned, hydro-electric—about 800 megawatts—and are looking at additional hydro-electric here in Alberta; and then we invest as well in geothermal electricity in California, where we generate electricity from heat under the ground.

So at TransAlta, we believe fundamentally that if you look out the next 50 years and are thinking about CO_2 and energy use, you need to have projects in all areas. We believe that fundamentally you need to be able to draw on all energy resources, which is why we are focusing on all of those. But our company would not participate in nuclear at this time.

● (1630)

[*Translation*]

Mr. Bernard Bigras: I have a final question. A few months ago funding of some $780 million was announced for a second carbon capture and storage project, $343 million of which will be contributed by the federal government. A few years ago, a group of experts estimated that $2 billion in public investments in carbon capture and storage projects would be required.

I have the impression that, for this type of project, a great deal of funding comes from the public sector, but not much from the private sector. Aren't you basically in the process of having this carbon capture and storage technology funded by the public sector? I would like to know the breakdown of costs for the application of this technology, particularly with regard to industry. Is there a witness who could give us information on this?

[*English*]

Ms. Dawn Farrell: I can comment on that. The project you're referring to is our project, Project Pioneer, and the total overall cash spent is in the order of $1.3 billion, of which approximately $750 million is coming from the federal and the provincial governments, with the rest coming from private sources. That project, when it is finished, will be one of the first large-scale pilots of its kind, and it will prove up the technology and determine whether it is viable for us to sequester CO_2 and move it to the enhanced oil recovery.

We have been very clear with all of the public in all of our speeches that we see Project Pioneer as what we call a P3 or private-public partnership, which requires funds from federal government, the provincial government, and private sources. We believe that once this project is up and running, it will allow industry to continue to push the cost down to make CCS viable for coal plants over the longer term.

The Chair: Thank you. Time has expired.

Ms. Duncan, it's your turn.

Ms. Linda Duncan (Edmonton—Strathcona, NDP): As I'm having trouble seeing the relevance of the testimony, except Dr. Schindler's on a review of the impact of the tar sands on water resources, I will be putting most of my questions to Dr. Schindler, although this is a topic of interest and I'm hoping we can pursue it in greater detail.

But one question I have for Ms. Farrell is this. If one were to do a proper cumulative impact study of the tar sands, one would of course also review the impact of coal-fired power plants. That is because coal-fired power plants, a large proportion of which are owned by your company, are the main source of electricity in Alberta, and the Keephills expansion is probably going to be used 100% for firing up the tar sands upgraders, if they are ever built in the Fort Saskatchewan area.

The intention, as I understand, is to draw water from the North Saskatchewan River. You clarified that the Keephills plant draws water from the North Saskatchewan River at a certain volume. My understanding is that huge volumes of water will be used by the upgraders and that some water is used in CCS. There has been huge controversy about the use of water by the coal-fired power plants, one of those being the Wabamun plant.

Can you confirm, Ms. Farrell, whether the Wabamun plant, which drew substantial water from Lake Wabamun, is being de-commissioned this year?

Ms. Dawn Farrell: Yes. Wabamun will be decommissioned on March 31. So on Wednesday night at ten o'clock, that plant will be shut down—actually, tomorrow night.

As to the water on the North Saskatchewan, the water that's required for the CCS project is a small amount, and it fits well within the existing water licences that we have for the power plants in that region.

Ms. Linda Duncan: The remainder of my questions will be to Dr. Schindler, but thank you to the others for your presentations. I very much appreciated Canada West's paper on the need for national energy security policy, and I will be pursuing that at another time.

Dr. Schindler, could you tell our committee whether anyone else, including the owners and operators of the tar sands facilities or either of the provincial or federal governments, has ever undertaken the level of analysis that you took, including the sampling of snow?

● (1635)

Dr. David Schindler: There have been no snow samples taken in recent years, certainly, except for water content. Environment Canada and Alberta Environment both have small monitoring programs. Both have been jeopardized year after year by successive budget cuts, to the point that, the last I heard, Environment Canada was down to monitoring very infrequently at only one station on the river, downstream of the oil sands plants.

Of course, it's easy to say that it's “all natural”, if you don't have a program that is intense enough to separate natural from industry sources. I'm hoping that as a result of the work we've done, that program will be upgraded, because they have very good people and the right expertise and equipment to do a really good monitoring program.

Ms. Linda Duncan: Dr. Schindler, I noticed in your testimony and in the written testimony you provided to us that you mentioned earlier work by Dr. Timoney and a study by Timoney and Lee. Am I to understand that this peer-reviewed field work analysis you've done in fact simply confirms what several years ago was already made known.

Dr. David Schindler: That's largely correct. Their work, of course, was criticized because it was at very few stations on the river. And it was dismissed in part because it was felt that the background for fish in mercury, for example, was always high, which is true. But there have been studies at the experimental lakes area that I reference in my brief that show that if you put more mercury in the river, the mercury in fish will go up. So what's happening with respect to mercury is not good news. What were originally high mercury levels are probably going higher. We have the fish to analyze, so we'll know within a year.

Ms. Linda Duncan: Dr. Schindler, you also mention reclamation. Are you aware if the provincial government seeks the input of federal authorities, such as federal Fisheries, when they sign off on reclamation plans? And can you clarify what role you would suggest the federal government might play, particularly where some of those tar ponds are adjacent to the river?

Dr. David Schindler: I don't know if the federal government is consulted at all on the sign-off. I do know that what industry is saying about reclaiming to the same sort of communities that were on that land before is not going to happen. My wife, for example, is a scientist working in reclamation in the oil sands. What needs to be done is to set some reasonable reclamation targets that can be obtained, and then reclaim.

Ms. Linda Duncan: Dr. Schindler, what inspired you to go in and do this intensive fieldwork, and was any government money provided to do that work?

Dr. David Schindler: No, it wasn't. I knew the governments were already strapped for cash for their own work. If I'd asked the Natural Sciences and Engineering Research Council of Canada for the money, they would have told me to go around and get letters of endorsement from all of the oil companies. On the other hand, I knew of two foundations that were anxious to see the work done. So I did it with foundation money.

Ms. Linda Duncan: So part of the reason, clearly, why you're recommending this be done by government...are you suggesting that this kind of monitoring should be ongoing and not just a one time only by dedicated scientists?

Dr. David Schindler: Yes. I don't think it's the place of university scientists to run long-term monitoring programs. They're not any more suitable for a succession of graduate students to do than a succession of consultants. You really need long-term expertise. Environment Canada is very good at doing it. They have a long history of expert monitoring, and they're the agency best suited to do it.

What I'm suggesting is that perhaps some university and other scientists be in an oversight role to ensure that the results are reported to the public, but that Environment Canada is the agency best suited to do the program.

● (1640)

The Chair: Thank you.

Moving to our last questioner on the seven-minute round, Mr. Warawa.

Mr. Mark Warawa (Langley, CPC): Thank you, Chair. Thank you to the witnesses for being here, and also thank you for using video conferencing. It does protect the environment when we take these efforts, and you don't suffer from jet lag, so thanks for the efforts in that respect.

I personally have visited the oil sands twice, once from the Athabasca River and the other time last year was with the committee. From the river I saw the natural leaching of bitumen into the watercourses. And then the primary focus on our second visit with the committee was actually on site at the oil sands, and I think each of us saw something different from what we expected.

Reclamation is important to me, and we did see some reclamation. In fact there was an area where buffalo had been reintroduced in a reclaimed area. We saw surface mining, and we also saw examples of in situ. We heard from witnesses in Fort McMurray, Fort Chipewyan, and Calgary and Edmonton, so it was actually a very informative hearing from first nations, industry, scientists. And unfortunately Mr. McGuinty and Mr. Bigras chose not to be part of that, but I think it was very beneficial for everyone who attended.

I'm going to Weyburn, Saskatchewan, on April 7—

The Chair: Mr. Warawa, I need to interrupt you here.

It's against House rules to point out absences that occurred in the House or at committee meetings, and I expect you to respect that.

Mr. Mark Warawa: Oh, at committee? My apologies.

On April 7, I'm going to Weyburn, Saskatchewan, to actually see the carbon capture facility there, and I encourage anybody from the committee who would like to come. I've always found that to see a facility and to see technologies is very enlightening and helpful in making good decisions.

The other thing I want to share with the witnesses is that I've been at a number of international environmental conferences—in Berlin, in Washington, D.C., and in Copenhagen—and in each case, the importance of carbon capture and storage was shared with the delegates. Science is counting on Canada to be a world leader, which we are—and to give credit where it's due, the previous Liberal government endorsed the technology of carbon capture and storage, as does this government, and provided funding for the same.

The science community is sharing that they're hoping that Canada and the United States will be able to commercialize carbon capture and storage and to see it affordable so that for developing countries that burn coal, and likely will be burning coal to create electricity as they develop, that technology is affordable.

Ms. Farrell, you unfortunately ran out of time and the committee didn't want to hear the rest of your presentation. I think it's valuable to hear from you. You wanted to share with us a monitoring program, water safety and use, and technology. So could you continue sharing with us about carbon capture and storage and its importance? Is it a proven technology? I believe so, but perhaps you could continue sharing with us.

Thank you.

Ms. Dawn Farrell: Thank you very much.

First of all, in terms of "is it a proven technology", there is a project in the U.S. called Mountaineer, which does prove the technology on a smaller scale.

The real purpose of Project Pioneer is to get the project to large scale and ensure all the detail is taken care of so that we can get the cost down as we go forward, so this technology can happen. So it's really not proving whether or not we can sequester CO_2; it's trying to get the costs down so that carbon capture and storage, along with coal production, can be economically viable long term.

Monitoring is probably one of the most important pieces of work we'll do here. Through our monitoring program we will be monitoring injection-well pressures, temperatures, rates, CO_2 composition. We'll be monitoring to be able to detect the location of the CO_2 plume, the integrity of the abandoned wells. We will be able to detect if there is any impact on groundwater quality, which I think is some of what you're really interested in here today, and we'll be able to detect any seepage in the soil. Monitoring will go on through the operational stage of the project and also past the end of the project, so I think that's very important.

In terms of water safety, I know there's been some contention that there's some potential for groundwater to be impacted by CO_2 injection. I think it's important to note that these aquifers we'll be injecting CO_2 into are well below the depths where groundwater sits. We'll be making sure we can prove conclusively that the CO_2 is taken down into the saline aquifers and that it does not affect groundwater. That will be an important part of what we're trying to do.

The previous speaker asked us about water. It's important to note that on the North Saskatchewan River, our approved licence limit for our power plants is 43 million cubic metres. Our power plants today at those locations use 26 million cubic metres, and Project Pioneer will use about 1.6 million cubic metres per year. It uses a relatively small amount of water relative to the coal plants at that site and fits well within the capacity of that water basin.

I think it's important that the committee note that this kind of funding among the provinces, the federal government, and private industry—with this scale of project—will put Canada well ahead of what I think other G-8 countries are doing on the CO_2 front. We will take CO_2 out of the air and sequester it. There won't be a lot of discussion about CO_2. A million fewer tonnes of CO_2 will be emitted into the environment after this project is finished. I think that will serve this country well and it will serve industry. As we go forward and look for environmentally and economically cost-effective solutions, I hope this will be on the list of things we can do.

Thank you.

● (1645)

The Chair: Thank you.

Time has expired. We're going to go to our five-minute round.

Mr. Scarpaleggia, if you'd kick us off, please go ahead.

Mr. Francis Scarpaleggia (Lac-Saint-Louis, Lib.): Thank you, Mr. Chair.

Dr. Schindler, you provided incontrovertible evidence that oil sands operations are polluting surface water in the region, more specifically the Athabasca River, which runs north to Fort Chipewyan.

I'd like to ask you about surface water contamination through the water link, and specifically with regard to the tailings ponds. We know tailings ponds leak into groundwater. Shell even said their tailings ponds would leak into the groundwater, but it wouldn't be a long-term problem, I guess because that pollution would be diluted. I think it's called the "dilution is the solution to pollution" approach.

Do you agree that the seepage from the tailings ponds into the groundwater is not a long-term problem because of dilution?

● (1650)

Dr. David Schindler: I would say that at the current rates of river flow and of seepage, it's probably a very small part of the overall picture, compared to the airborne and surface runoff problems we've documented. With respect to the tailings ponds, however, the scenario I dread would be a tailings pond rupture where several million litres might hit the river at once, particularly under ice.

There was one spill in 1982 of only.... I believe 50 million litres were released into the river, and because it was impossible to clean up under ice—and it still is impossible—that spill made it all the way to Lake Athabaska. If something the size of Mildred Lake were to breach the wall of that dike under winter conditions, I'm sure we'd see the effects of that spill all the way to Great Slave Lake and the McKenzie.

That's not unheard of. A year ago, I had some graduate students look for evidence of tailings ponds breaks and breaches of the walls in the last 20 years. They came up with 184 incidences around the world.

Mr. Francis Scarpaleggia: Dr. Schindler, in terms of naphthenic acids, which are in the tailings ponds, I believe.... Is that correct?

Dr. David Schindler: Yes, they are.

Mr. Francis Scarpaleggia: I've been told that naphthenic acids aren't regulated under CEPA, whereas they are regulated under EPA pollutants regulations. Do you know if that's correct?

Dr. David Schindler: I don't know for sure. I know that a few years ago that was correct. My colleagues in Environment Canada tell me that CEPA needs updating by adding many pollutants to the current list.

Mr. Francis Scarpaleggia: You did say that the Athabaska or service water was being contaminated, not only through air but through water pollution from the oil sands, did you not? Did I understand correctly?

Dr. David Schindler: I did.

Mr. Francis Scarpaleggia: What would the transmission mechanism be there?

Dr. David Schindler: It would be via water.

Mr. Francis Scarpaleggia: It would be via water, but would it be surface leaks from the tailings ponds? You've mentioned that it's not really an issue through the groundwater, but would it be through leaks of the ponds, for example, around Beaver Creek in the Syncrude tailings pond, which was documented as a source of surface water contamination a couple years ago?

Is that what you are referring to?

Dr. David Schindler: I think most of it is reaching the river via the tributaries, many of which are mined right to the river banks or even destroyed. If I look at all of our evidence, it looks like the worst contamination occurs during the first few years after a watershed is exposed, and that's very common in watershed disturbance. Any chemical that's in the geological substrate increases dramatically once the surface biological layer is removed, and then the amount of contamination tails away with time.

Mr. Francis Scarpaleggia: Thank you, Dr. Schindler.

I believe my time is up.

The Chair: Your time has expired.

Mr. Armstrong, it's your turn in the five-minute round.

Mr. Scott Armstrong (Cumberland—Colchester—Musquodoboit Valley, CPC): I want to thank all the presenters for their presentations today.

Ms. Farrell, I want to thank you for your presentation. My riding is on the east coast of Nova Scotia, and many of my constituents currently work in the Alberta oil industry.

I found intriguing in your presentation your comments on the appropriate geological conditions for carbon storage. I'm wondering, could east coast coal mines—and the east coast coal mines that have been closed—be appropriate geological sites for the storage of CO_2?

Ms. Dawn Farrell: I, myself, am not certain. My colleagues here say there is some capacity there. It would not be similar to what we have in Alberta, and you have to do specific studies for each site to really understand the geology. For example, on the west coast, we've done a study for our Centralia plant, and there is not a sufficient geological site there because of seismic issues. You have to go site by site and study by study to prove that up. But there is some capacity.

● (1655)

Mr. Scott Armstrong: Thank you.

If they were suitable for this type of operation, what potential economic benefit would there be? Also what type of safety and environmental concerns would you have in trying to open up something like that on the east coast?

Ms. Dawn Farrell: The way I look at the economic benefit is I think people tend to think about energy as what are the lowest-cost energy resources you have in your region that can enable you to deliver low-cost energy but make it environmentally effective. When you think about coal in Alberta, for example, it's a very low-cost resource. We have 300 years of supply that sits just under the prairie. If we can prove up CCS, we can take about 4,000 megawatts of coal plants and extend their lives for 15 or 20 years, and take out the impact of CO_2.

That gets the people of Alberta a resource that's more in the $80, $90 to $100 a megawatt hour range as compared to wind, which is in the $90 to $100 range. New hydro is now $125 to $145.

Earlier one of your panel members asked about nuclear. Our studies show that nuclear is in the $165 a megawatt hour range.

We try to look at each resource, look at the cost of that resource, and then look at the cost of mitigating the environmental impacts.

My husband is also from Nova Scotia, so I'm familiar with the concept of people coming from Nova Scotia to Alberta. From what I understand, when we look at the Nova Scotia region, you have some wind. We've got wind now in New Brunswick, and I know wind's being developed in Nova Scotia. My understanding is your coal is quite expensive there.

So I think what you'd have to look at is the cost of that coal relative to the cost of the CCS and put those together and compare them to other energy sources you have in the region, which could be wind, small hydro, and some gas-fired facilities. That's what I would look at.

In terms of safety, a tremendous body of work is now being gathered on the kind of work we're doing here in Alberta. You could get in touch with some of the geologists, the engineers who have been working on these projects. They could outline the kind of study that would have to happen to determine just how safe it would be in the various geological formations there.

I think all of that is very doable at this point.

Mr. Scott Armstrong: Thank you.

I just have one further question, Ms. Farrell. Do you have any current investment in geothermal energy derived from mine water?

Ms. Dawn Farrell: No. Our geothermal is invested in California and it's from heat that comes out of the ground. It's not mine water.

Mr. Scott Armstrong: Thank you.

My next question is for Dr. Gibbins. In a recent op-ed you called for the resurrection of a Canadian environmental agenda focused on building a conservation ethic.

Can you elaborate on how this stronger conservation ethic is compatible with an increased focus on oil sands development?

Dr. Roger Gibbins: Certainly the oil sands development will bring these into question. I think what your committee is looking at shows the point I was trying to make, and that is that there's a strong interest by Canadians in the environment they can touch, feel, and smell.

Water issues are therefore very important to Canadians. That's been shown time and again.

All I was trying to point out is that our attention to the larger, more abstract environmental challenges, global warming and wealth redistribution, have taken us off an environmental agenda that may be of more acute concern to Canadians.

The Chair: Mr. Armstrong, your time has expired.

Monsieur Ouellet.

[*Translation*]

Mr. Christian Ouellet (Brome—Missisquoi, BQ): Thank you, Mr. Chair.

Ms. Farrell, I recently read in a federal government publication that 50% of the CO_2 emitted by the oil sands would be captured by 2030. Do you believe that is possible?

● (1700)

[*English*]

Ms. Dawn Farrell: I am not an expert at CO_2 recovery in the oil sands, so I could not comment on that. I do think it is feasible relative to the coal power plants in Alberta that we own that are in the Wabamun area.

[*Translation*]

Mr. Christian Ouellet: I will put the same question to Mr. Thompson.

Do you think it will be possible to capture 50% of the CO_2 emitted by 2030?

[*English*]

Mr. Graham Thomson: I'm not an expert, just to make that clear; I'm a journalist, and I've seen nothing to indicate that, in my readings, they actually get that high from the oil sands.

The answer is no.

[*Translation*]

Mr. Christian Ouellet: So you are answering my second question.

Given that currently, only 1.3 million barrels of oil per day are being produced and that in 2030, 3, 4 or 5 million barrels will be produced, that means that in 2030, the same quantity of CO_2 will be emitted as now, and perhaps much more.

[*English*]

Mr. Graham Thomson: Yes. From the oil sands we'll be seeing a tripling, up to 140 million tonnes a year. I think we're doing about 38 million tonnes a year right now in oil sands, and the projection is that it will be up to 140 million tonnes a year by 2020. So we're seeing a huge increase, a tripling, of the emissions from the oil sands, and we don't see any way that they can actually reduce their emissions in a significant way.

[*Translation*]

Mr. Christian Ouellet: Is your text as a whole available? We only have chapter 11.

[*English*]

Mr. Graham Thomson: Yes, it is. I'm sorry, I didn't know you didn't have a copy.

I think you can Google it on the Program on Water Issues at the University of Toronto. It's available on the web page at the Program on Water Issues. Also, afterwards I can send the clerk a link for the whole report.

[*Translation*]

Mr. Christian Ouellet: Mr. Chair, could we obtain this text?

[*English*]

The Chair: We don't have it translated. Once we have it translated, we'll get that circulated.

[*Translation*]

Mr. Christian Ouellet: Thank you.

Mr. Thompson, you stated the following: “Only limited near-term opportunities exist in the oil sands and they largely relate to upgrader facilities.”

Could you explain what that means to us?

[*English*]

Mr. Graham Thomson: What I was referring to, and I'm not too sure about the question, is that carbon capture is best done at a plant that is a large, single-source emitter, like a coal-fired plant. Now, there are plans to do carbon capture at upgraders. One of the pilot projects will be done, they hope, at the Shell Scotford Upgrader near Edmonton. It's called the Quest project. They're hoping to capture the CO_2 from a plant that actually produces hydrogen. They need hydrogen to help upgrade the bitumen. So there is some limited potential for carbon capture when it comes to the upgraders.

When it comes to the actual extraction process on the ground in the Athabaska oil sands, it seems very doubtful at this point that they can use carbon capture, because, for example, in the mining of the oil sands, most emissions there come from things like the giant trucks they use to haul the tar sands. Also, when it comes to in situ development, it means burning a lot of natural gas, and the natural gas effluent stream is very expensive to capture the CO_2. So it seems that the extraction process does not lend itself well to carbon capture.

● (1705)

The Chair: Thank you very much.

Mr. Braid, welcome back. It's good to see you come to visit us. You have five minutes.

Mr. Peter Braid (Kitchener—Waterloo, CPC): It's wonderful to be back, Mr. Chair. Thank you very much.

Thank you very much to all of our witnesses for being here this afternoon.

Dr. Gibbins, if I could, I'll start with a question for you, please. In your presentation you said something that intrigued me. You indicated that in the somewhat near future, tailings ponds will be obsolete. Could you just elaborate, please, on that comment?

Dr. Roger Gibbins: You should take the statement with a very large grain of salt. This comes from my understanding of the technology.

The general point is an important one. We are looking at oil sands operations now based on technologies and an understanding of the technologies that go back 10, 20, or 30 years. When you move forward 10 or 20 years, you're into a very different kind of technological environment.

I think it's important that the committee not find itself frozen in time in terms of its understanding of what has been a very fluid technology.

Mr. Peter Braid: Very good. Thank you.

Moving to you, Ms. Farrell, TransAlta has Project Pioneer currently. Do you have any plans for additional CCS operations in the future?

Ms. Dawn Farrell: At this point, we do not. We'd like to get Project Pioneer up and running and successful; then we'll reassess after that.

Mr. Peter Braid: In your presentation, you indicated that safety is a pre-eminent concern. Could you outline what some of those safety measures or precautions are or will be and elaborate on how you ensure safety?

Ms. Dawn Farrell: There are many elements to safety—safety during construction, safety of the overall project—but the key element here is the safety of ensuring that the CO_2 goes to where we say it should go and stays there.

The number one element of our plan relative to that is to ensure, through the engineering studies we're putting together today and through the organization of this project, that all of the monitoring recommended by some of the world's top scientists and experts in this area is put in place, such that we can monitor where the CO_2 is, how it moves, whether or not any of it comes back up through the pipes or there are any breaks in the pipes.

We'll be utilizing some of the world's best practices there so that we can monitor where the CO_2 is and assure that we achieve what this project has set out to do.

Mr. Peter Braid: What are the timelines for Project Pioneer?

Ms. Dawn Farrell: Currently, we're doing a FEED study, a front end engineering and design study. Our partners are getting together with Alstom to basically do the first work on the design engineering and make sure that the costing all comes together relative to what we proposed, so that we and the governments will feel comfortable that if we go ahead and build the project, it will be built for the cost that we said it would and will actually secure the CO_2 we said it would.

It will take us about another year, perhaps a year and a quarter, to finalize that work. It's about $20 million worth of work. At the end of that stage, we'll have proven out the cost of the projects and proven out many aspects of the well program. We'll have determined whether or not a pipeline can be built and CO_2 in fact can be sold into the EOR facilities.

At that point, we'll make a decision to build the project. It will take approximately two years to build. We hope to have the project operational somewhere in the 2015 to 2016 timeframe. The current plan would have all of the CO_2 sequestered for two years and then moved through the pipeline after that.

● (1710)

Mr. Peter Braid: Finally, why has TransAlta embraced this technology?

Ms. Dawn Farrell: It's really quite simple. Alberta sits on about 300 years of a very low-cost, very low-sulfur, strong coal resource that we've been using in this province since the 1950s—in fact, the plant we're decommissioning tomorrow is over 50 years old. That has created a strong advantage in terms of energy costs for this province.

If CCS can be made to be commercial, that resource is developable, economic, and sustainable for the next 300 years. If it isn't, then the province will have to move to higher-cost forms of electricity, including large-scale hydro and what one of your speakers talked earlier about, such things as nuclear.

It's in our corporate best interests to extend the lives of the efficient coal plants that we have today and continue to provide a low-cost form of electricity in Alberta. It's in the province's best interests to find ways to sequester CO_2 from the coal plants as its contribution toward CO_2 reductions as we go forward and develop the vast energy resources of the province.

The Chair: Thank you very much.

Mr. Trudeau, you have the floor.

Mr. Justin Trudeau (Papineau, Lib.): Thank you, Chair.

To start with, I'd like to pick up on what Mr. Braid asked of Mr. Gibbins. Tailings ponds are not a technology that is a flavour of the month. They've been around for over 40 years and show no sign of being replaced any time soon.

I think one of the assertions that industry sometimes makes, that they're going to find a technological solution such that they won't need tailings ponds, was well to not go unchallenged. I thank Mr. Braid for that.

Second, Ms. Farrell, I think one of the things that has been tremendous in your presentation is that it has confirmed what many of us have suspected, that CCS really isn't much of a solution to the oil sands emissions challenge. It's very good, as Mr. Thomson has said a number of times, for single, large industrial-type emitters, but I hope this presentation today has on both sides removed from politicians the easy saying that CCS is going to be a solution to development of the oil sands. It's being demonstrated in an ever clearer way that carbon sequestration and storage is not going to be a solution to reduce our greenhouse gas emissions.

When we were asking about who is an expert on CCS extraction in relation to oil sands, which is what technically we'd like to look at here today, the answer is that there do not seem to be any experts in oil sands and CCS, because it's not really a subject that develops any level of expertise.

I will ask for a response. Is that a fair assessment, that there really isn't anyone who is...?

Ms. Dawn Farrell: I actually don't think it's a fair assessment. And I don't think it's fair to say that my presentation confirms that there isn't potential for CCS in the oil sands.

To be fair to the people who are working hard on these files in the oil sands, what my presentation was intended to do was build confidence that we are moving very clearly and very solidly in a way that will confirm that CCS will work for our coal projects in Alberta.

I would really encourage the committee to get presentations from the Shell project and from the other projects—particularly the one that was mentioned from the company that's up north, Swan Hills. These are very innovative projects. I think they would give you a much clearer understanding of what the potential is in the oil sands. I think you'd be remiss if you do not do that. This committee has no expertise on it to provide you with any guidance on this other than conjecture, at this point, so I'd really encourage you to do that.

Mr. Justin Trudeau: Thank you.

One thing, then, is to remind ourselves that this is really focused on oil sands and water. In bringing in CCS, the question we had about it is what the potential impact of CCS is on underground water reserves and aquifers. Much was made of the fact that it would be separate from groundwater reserves and that the sequestration would happen in saline aquifers.

Maybe, Dr. Schindler, you could tell me a little about this, or someone else. What is the role of saline aquifers in our system? Are they inert? Do they not contribute at all? Do they have no role? Can we pollute them or fill them with carbon without any consequences other than the danger of leaking? Is that a fair assessment?

● (1715)

Dr. David Schindler: I think the big danger would be their leaking through the many wells that will be driven through freshwater aquifers to reach those very deep saline ones. Somebody earlier referred to a pincushion effect. My guess is that we'll have tens of thousands of wells drilled through freshwater aquifers to reach bitumen, and for carbon sequestration, to even deeper levels. I suspect that would be the big danger.

I think if we can get it down without seepage into the saline ones, it would probably stay there.

Mr. Justin Trudeau: Thank you, Dr. Schindler.

When we started this oil sands and water study, the real concern was going to be tailings ponds leakage, which you've indicated happened and which industry has indicated has happened.

Your study clearly highlights that the danger to water and in the system is much more through airborne contaminants. What I'd like to know is what other studies have corroborated your discovery or demonstration or findings and/or what studies have disproved them. Is there enough science around it? You mentioned the need for long-term monitoring by Environment Canada, but are there other studies out there that either corroborate or disprove what you've managed to develop?

Dr. David Schindler: There were other studies in 1978 and 1981 that were published as reports under AOSERP. Other than that, no one has addressed the contaminants in snow. But they dovetail well with the "emissions to the atmosphere" reports, as I pointed out, as part of Environment Canada's NPRI study. What we're hoping is that they will get some renewed attention as a result of our study.

The Chair: Thank you. Time has expired.

Mr. Watson.

Mr. Jeff Watson (Essex, CPC): Thank you very much, Mr. Chair. Thank you to our witnesses.

Of course, there's emerging consensus around the importance of greater oil sands development, so much so that political leaders are stating their support for it. We have the current Liberal leader speaking in Alberta; it's been clear that he supports greater oil sands development. We have Liberal premiers in Ontario and Quebec recently on the record acknowledging the importance of oil sands development to their economic recovery, post-recession. Of course, it's been recently reported that the Bloc leader has invested, for more than a tidy return, in oil sands development himself. So we know how important this—

The Chair: Order, please.

Mr. Bigras?

[*Translation*]

Mr. Bernard Bigras: Mr. Chair, I think we are getting away from the subject. I don't think that that is being studied right now. I would urge you perhaps to remind members that we are studying the project, and also of what the Standing Orders stipulate with regard to sticking to the topic at hand. It is certainly not the accounts and personal finances of each of the members. People might be surprised to learn what is going the other side.

[*English*]

The Chair: Do you wish to speak on that point of order, Mr. Warawa?

Mr. Mark Warawa: On that point of order, I think my honourable colleague is pointing out the balance—sustainability. We have to have a development that is done in an environmental way, but there has to be also a sustainable approach. What he was pointing out is that in fact the Bloc leader supports personally the oil sands, by investment. I think it shows a confidence and sustainability.

The Chair: I'm going to rule you, Mr. Watson, out of order and ask that in our role as parliamentarians we not make disparaging remarks about other members.

I'm also going to rule it out of order on grounds of relevance, in that I don't believe it adds anything to the debate on the questions we have right now.

● (1720)

Mr. Jeff Watson: Mr. Chair, you never allowed me to even speak to the point of order.

The Chair: Did you want to speak to the point of order?

Mr. Jeff Watson: Well, you've already ruled now, Mr. Chair, so I'm not sure that I can speak to it.

The Chair: Well, I found your comments offensive.

Carry on. I'll give you an extra minute.

Mr. Jeff Watson: Thank you very much. I was talking about the importance of oil sands development. So the work of this committee obviously being important....

Turning to our witnesses, I'd like to start, Dr. Gibbins, with you.

In a 2007 policy paper titled "Getting It Right: A Canadian Energy Strategy for a Carbon-Constrained Future", you recognized that "climate change is a global challenge that requires a proactive and creative public policy response by all Canadians". Your paper focuses on the supply side of the energy question and has suggested that "getting It right" means "seeking policy options that are principled, regionally balanced, economically viable, and effective over time".

Specifically, and with respect to the oil sands development, what does "getting It right" mean to this sector?

Dr. Roger Gibbins: It's clear that any discussion about oil sands development will have to be folded into a broader strategy on climate change/global warming that the Government of Canada and Canadians adopt. What we're trying to say is that rather than focus exclusively on a legitimate set of environmental concerns, we also have to consider the energy concerns that Canadians have in terms of security of supply, price of supply, and so on. We're just trying to argue that the oil sands are part of a very complex energy mix in Canada: it's nuclear in Ontario, it's hydro in Quebec and British Columbia, it's hydrocarbons in other parts.

We need some kind of policy integration that looks at that set of energy sources and doesn't cherry-pick and say we're going to focus on the oil sands alone, because they're "out of sight, out of mind" for the rest of the country.

Mr. Jeff Watson: Remaining with the oil sands sector and your comments on energy mix, what role do you see the oil sands playing in Canada's future energy mix?

Dr. Roger Gibbins: My guess would be that in the short term they will be an increased component of that mix and over the long term a diminishing component. We will move toward more carbon-constrained, carbon-neutral energy sources. It's going to take a long time to get there, and we're not going to have the kinds of massive hydro developments we've had in the past. So we're going to change that energy mix, but in the short term, that is 10 to 15 years, hydrocarbons are going to remain important. The oil sands are going to remain an important part of that. I don't see how we can escape that.

Mr. Jeff Watson: I want to move to a question on water usage now, and, Mr. Gibbins, you can answer this, or perhaps Ms. Farrell. The Department of Fisheries and Oceans and Alberta Environment have jointly developed an interim water management framework. That was created to ensure ongoing oversight that can react to changes in water availability in the Athabasca River basin. The interim framework, as you all know, sets maximum water withdrawals for each week of the year.

Given that oil sands production goes on 24/7 almost 365 days a year, what challenges do these water limits pose for industry, and how is the industry managing the limitations? And if I could pose a further follow-up—I may not get a chance to—what are the prospects for further reductions in water use?

● (1725)

Dr. Roger Gibbins: I don't think I'm the appropriate person to address that.

Ms. Dawn Farrell: The only thing I can say on the Athabasca is it would be important, if the committee is interested in a discussion on that, to look at some of the work being done in Alberta on the storage mechanisms that are required to ensure you have the ability to have the water at a steady state. Those are the kinds of discussions that are going on here in Alberta.

The Chair: Thank you. Time has expired.

For the committee's information, O'Brien and Bosc, chapter 13, "Rules of Order and Decorum", page 614: "Remarks directed specifically at another Member which question that Member's integrity, honesty or character are not in order."

Mr. Jeff Watson: Mr. Chair, I want to speak to that, if I could, when you're done.

The Chair: It further states, "A Member will be requested to withdraw offensive remarks, allegations, or accusations of impropriety directed towards another Member."

Also, there are questions of relevance, whether or not the point you raised is relevant to the overall debate we're sharing today.

Mr. Jeff Watson: Fair enough, if you want to question the relevance, but you raised this as a disparaging remark, and I want the record to show that certainly I was not phrasing it as a disparaging remark. In fact, one's personal investment in the development of the oil sands is a positive development. I was simply stating that if we have political consensus among leaders, that's a positive development. We're recognizing the significance of oil sands development. That in no way is a disparaging remark, Mr. Chair. I was not critical of his investments.

The Chair: Point taken. With that....

Mr. Justin Trudeau: Is the word “smarmy” in there somewhere?

The Chair: Mr. Allen, you get to bat cleanup today.

Mr. Mike Allen (Tobique—Mactaquac, CPC): Thank you very much, Mr. Chair. I have a few questions for Ms. Farrell.

On page 13 of your presentation, your Keephills plant, you're talking about water and water diversion. You say a portion of this water is returned to the river. Can you comment about what a portion means, and how much?

The second part of that question is that you're going to be using 26 million cubic metres of water, of which 1.6 million cubic metres is for your CCS. You also talk on the next page about a “net creator of water due to the significant condensation...”. What is your plan to recapture that condensation and manage that water so it can be safely returned to the river?

Ms. Dawn Farrell: In terms of a portion of the water, it's a very small amount. I'll have to get the exact number for the committee, and we can forward that to you.

What was your second question?

Mr. Mike Allen: It was about the 1.6 million cubic metres for CCS, which you're adding, but I guess the important thing is “a net creator of water due to the significant condensation”.

Is there a plan to capture that and a plan to manage it before putting it back in the river or wherever you're going to put it?

Ms. Dawn Farrell: We condense the water that also comes out of the flue gas. We return that back to the cooling pond, so it becomes makeup water.

Mr. Mike Allen: You talked about the Mountaineer project, that there is a proven project down there. Can you talk about the size difference between the Mountaineer project and Project Pioneer in terms of megawatt hours?

Ms. Dawn Farrell: In regard to Mountaineer, the small one that's proven is in the 10-megawatt range. Ours is 100 megawatts. AEP is also undertaking a feed study—they were the ones who did the first phase of Mountaineer—to do a 235-megawatt project attached to a 1,300-megawatt coal plant.

Mr. Mike Allen: As part of carbon and CCS technology, it also requires an extra station service load on the unit as it is. Is there any kind of estimate as to what the percentage might be in terms of station service—otherwise some people call it “parasitic load”—that would be required to run it?

Ms. Dawn Farrell: Yes. There are estimates that have ranged from 10% to 20%. The actual estimate for this project is confidential. It's seen by the project vendor as competitive information.

What we do know is that in the early estimates from Mountaineer —the pilot project that preceded this one—they've had good reductions in the parasitic load. That's something that we're all working on, because that's one of the key issues that goes along with CCS, how to get that parasitic load down.

● (1730)

Mr. Mike Allen: Lastly, on your generation fleet, you said not all locations would be suitable for CCS. Do you have any idea right now what percentage of your generation fleet for fossil assets might qualify for CCS if the project goes well?

Ms. Dawn Farrell: All of our coal at the Wabamun Lake area, which would be our Sundance and Keephills plants—2,000 megawatts at Sundance, and then there will be 1,200 megawatts at Keephills—would qualify. There is also a large plant out by Hanna, at Sheerness, that would also qualify.

The project that we know does not qualify is our Centralia plant in Washington, D.C., which is 1,400 megawatts. There the issue is both the geological formations, but more importantly its closeness to Seattle. As you all know, the seismic activity on the west coast is too significant to safely sequester CO_2. We're looking at other technologies for that.

The Chair: Thank you.

Your five minutes is just about up, so we have used all of our time for the day.

I want to thank all our witnesses—Roger Gibbins, Dawn Farrell, David Schindler, and Graham Thomson—for coming by video conference to us here in Ottawa and giving us their perspective in our study on the oil sands and water resources.

I appreciate our committee members dealing with some of the technical difficulties. It has eaten into a little bit of our time today, but I think we still had a pretty fulsome round of questions and answers.

With that, I'll entertain a motion to adjourn.

Mr. Justin Trudeau: I so move.

The Chair: The meeting is adjourned.

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