

**ALASKA STATE LEGISLATURE**  
**JOINT MEETING**  
**HOUSE SPECIAL COMMITTEE ON ECONOMIC DEVELOPMENT, INTERNATIONAL**  
**TRADE AND TOURISM**  
**SENATE SPECIAL COMMITTEE ON WORLD TRADE, TECHNOLOGY & INNOVATION**  
January 26, 2010  
10:09 a.m.

**MEMBERS PRESENT**

HOUSE SPECIAL COMMITTEE ON ECONOMIC DEVELOPMENT, INTERNATIONAL  
TRADE AND TOURISM

Representative Jay Ramras, Chair  
Representative Chris Tuck  
Representative Nancy Dahlstrom  
Representative Mark Neuman  
Representative Lindsey Holmes

SENATE SPECIAL COMMITTEE ON WORLD TRADE, TECHNOLOGY & INNOVATION

Senator Lesil McGuire, Chair  
Senator Gary Stevens  
Senator Bill Wielechowski  
Senator Hollis French

**MEMBERS ABSENT**

House Special Committee on Economic Development, International  
Trade and Tourism

Representative Reggie Joule  
Representative Mike Chenault  
Representative Kyle Johansen  
Representative Harry Crawford

Senate Special Committee on World Trade, Technology & Innovation

Senator Lyman Hoffman

**OTHER LEGISLATORS PRESENT**

Senator Johnny Ellis

**COMMITTEE CALENDAR**

PNWER REGIONAL COLLABORATION ON ECONOMIC REVITALIZATION

- HEARD

**PREVIOUS COMMITTEE ACTION**

No previous action to record

**WITNESS REGISTER**

IAN BURKHEIMER, Program Manager  
Pacific NorthWest Economic Region (PNWER)  
Seattle, Washington

**POSITION STATEMENT:** Gave a slide presentation titled "PNWER Arctic Issues Caucus".

MATT MORRISON, Executive Director  
Pacific NorthWest Economic Region (PNWER)  
Seattle, Washington

**POSITION STATEMENT:** Gave a presentation on PNWER's Innovation Strategies.

RICHARD MARZ, Member  
Legislative Assembly of Alberta  
Alberta, Canada

**POSITION STATEMENT:** Provided comments about the oil sands of Alberta.

MICHAEL PADUA  
Alberta Ministry of International and Intergovernmental  
Relations  
Government of Alberta  
Alberta, Canada

**POSITION STATEMENT:** Provided a presentation on the oil sands and pipeline issues.

**ACTION NARRATIVE**

[10:09:48 AM](#)

**CHAIR LESIL MCGUIRE** called the joint meeting of the House Special Committee on Economic Development, International Trade and Tourism and the Senate Special Committee on World Trade, Technology and Innovation to order at 10:09 a.m. Present at the call to order from the House Special Committee on Economic Development, International Trade and Tourism were Representatives Tuck, Dahlstrom, Neuman, Holmes, and Ramras.

Present from the Senate Special Committee on World Trade, Technology & Innovation were Senators Stevens, Wielechowski, French, and McGuire. Also in attendance was Senator Ellis.

**PNWER Regional Collaboration on Economic Revitalization**

[10:10:09 AM](#)

CHAIR MCGUIRE announced that the first order of business would be a presentation by the Pacific NorthWest Economic Region (PNWER). She relayed that the PNWER delegation has been meeting with the governor and legislators on matters of energy, workforce development, and economic development. PNWER is comprised of a unique membership of public and private entities, and the state and territorial governments of the United States and Canada. Furthermore, the organization is nonpartisan and presents an opportunity for a collection of leaders from the Pacific Northwest region to meet and share information about the best practices of resource development, workforce development, and regional partnerships. Chair McGuire introduced the following guests: Michael Chisholm, Member of the Legislative Assembly, Saskatchewan, and Vice President of PNWER; Richard Marz, Member of the Legislative Assembly, Alberta; Representative Mike Schaufler, Oregon State Legislature, and Vice President of PNWER; Jennifer Loten, Consul, Consulate of Canada; Michael Padua, Alberta Ministry of International and Intergovernmental Relations; Matt Morrison, Executive Director of PNWER; and Ian Burkheimer, Program Manager for PNWER.

[10:13:39 AM](#)

IAN BURKHEIMER, Program Manager, Pacific NorthWest Economic Region (PNWER), presented a brief discussion of the newly formed PNWER Arctic Issues Caucus. He explained that PNWER members from the Northwest Territories, Yukon Territory, and Alaska have initiated the Arctic caucus. Members of the caucus first met during November 2009, in Regina, to discuss how to ensure that the issues important to the Arctic are effectively communicated throughout the region and to the federal governments. The caucus is comprised of legislators and private sector members who meet to identify issues and inform PNWER's "working group structure." Mr. Burkheimer advised the committees that PNWER meets twice a year to work on areas of regional interest such as transportation, tourism, and energy policy. The caucus proposed topics for discussion at PNWER's upcoming annual summit in Calgary during July 2010. The proposed topics are: (1) to the energy working group, the challenges and opportunities of outer

continental shelf oil and gas development; (2) to the transportation working group, presenting information to communities and businesses on improving the flow of goods, people, and services through the northern gateway; (3) to the telecom working group led by Northwest Tel, the development of telecom infrastructure; (4) to the border working group, identifying solutions to the challenges of the Alaska/Canada border. He then spoke of a proposal for PNWER to host a Northern Caucus Symposium in Anchorage during June 2010. The symposium would provide an opportunity for a high-level dialog between the government and business leaders from Alaska, Yukon Territory, Northwest Territories, and Nunavut. Mr. Burkheimer opined this would be a unique opportunity for sub-national jurisdictions to talk about issues and "help inform, again, our national and regional discussion on these issues." He noted that the caucus is working closely with Senator McGuire on its proposed symposium.

[10:19:17 AM](#)

CHAIR MCGUIRE observed the symposium would be an opportunity for Alaska to invite its neighbors from other Arctic regions to share information about Arctic policy and for the participants to project themselves as state, provincial, and territorial leaders. At this time, most of the groups involved in Arctic issues are federally based, and it is important for those who govern and live in the region to weigh-in on those policies. Indeed, the Arctic "frontier" will change the face of Alaska and Canada forever. Chair McGuire requested that committee members submit symposium agenda topics to her.

[10:20:53 AM](#)

MATT MORRISON, Executive Director, Pacific NorthWest Economic Region (PNWER), stated that PNWER has had a working group on innovation for the last five years. Initially, the Washington State Legislature undertook a two-year analysis of "synapses of innovation" from different areas of the U.S. The study indicated that the most important keys to success were the linkages between research and development (R&D) facilities. Although there are "turf issues" between higher education and R&D facilities, for the last three years PNWER has attempted to link R&D institutions in Canada and the United States in an innovation network. Legislators are concerned with the cost of building new nanotech labs; however, what the private sector wants is to access existing facilities, even if the facilities are a two- or three-hour plane flight away. At PNWER's last

annual summit, arrangements were made for 25 university presidents to participate in next year's summit discussion on innovation. Furthermore, at the last winter meeting, PNWER introduced the topic of "The Pacific Northwest as a Giant Science Innovation Park, a 'Tool Box' for Growth" in an attempt to build linkages and overcome the turf issues between existing facilities. This will enable the best and brightest to work together, and for the private sector to "tap into that network." Mr. Morrison advised that discussions at the meeting also led to the following questions: What platforms are needed? What are the structures needed to catalyze the collaboration? What does innovation as a distributive activity look like? Where are the nodes in this network across the region? How do we encourage the convergence of these nodes? As a result of these discussions, the Washington State [Economic Development] Commission Innovation Ecosystem asked PNWER to bring together key innovation thinkers from all of the provinces and states in the region to a two-day summit, March 16-17, 2009, in Seattle. He expressed PNWER's interest in a discussion on how to build a regional innovation strategy. Recognizing that there are great economic challenges throughout the region, he said, "It's innovation that we really need to get where we want to go, to create the high-paying jobs that we'll need for the future." Mr. Morrison acknowledged several technology laboratories in the region that have been working together, and concluded that the region has "so much more to gain from working together, than just going it alone." PNWER's goal is to go beyond the "silo" approach and identify a strategic economic development plan to inventory regional capabilities and bring in partners where necessary. He stressed the critical factor of including the private sector in the dialog, because that is where the ideas are pulled together and the products and jobs are created.

[10:27:30 AM](#)

MR. MORRISION then spoke of the PNWER Legislative Energy Horizon Institute-a new product developed in collaboration with the National Conference of State Legislators (NCSL)-that is a 60-course hour program. He said that at the completion of the course, legislators will receive a certificate of energy policy, and the first class from this successful program will graduate in April. Furthermore, the U.S. Department of Energy (DOE) is encouraging PNWER to expand the institute into a sustainable, nationwide program.

[10:29:39 AM](#)

MR. BURKHEIMER began the presentation entitled "PNWER at the 2010 Olympics." He noted that PNWER partnered with the Vancouver Olympic Organizing Committee (VANOC) to become the first bi-national organization, outside of the host country, to be invited as a direct partner with the local Olympic organizing committee. He pointed out that this partnership is in recognition of the support by PNWER, and its member states, of the 2010 Olympics. The games will bring about 2,600 athletes and about 250,000 visitors to the Vancouver, West Vancouver, Richmond, and Whistler areas, and about 3 billion people will be watching worldwide. In addition, attending the Olympics will be media from almost all of the major tourism marketplaces, including Australia. During the games, 15 days are "themed" by individual territories and provinces, and February 22 will be "PNWER DAY," on which there will be special events on economic development and tourism in Alaska. He displayed slide 3 that indicated the first event scheduled for PNWER Day is a "Tourism Promotion and Athletes Reception." Global and regional media are invited to the reception, where regional Olympic athletes will be recognized, and there will also be presentations by tourism offices and mixer activities. He stated that this will be an opportunity to improve existing relationships with international media, build new relationships, and improve relationships between various jurisdictions in the marketing sector. Later in the day, there will be a "Border Symposium" that will be a high level dialog with government and business leaders as a means to guide the discussion of the summer Trilateral meetings to the subject of the U.S. and Canadian border. In the evening, the Northwest Territories and Yukon Territory will host a "Business and Investment Reception." The reception will be held at Canada's Northern House pavilion; PNWER will be featuring Alaska and there will a focus on oil and gas, mining, transportation, innovation, and tourism. Also on February 22, "Global Business Leader Day" will be sponsored by the Government of Canada and the Financial Times publication. Finally, he displayed slide 7, which was a map illustrating the location of the events and noted that most are within walking distance.

[10:38:16 AM](#)

MR. BURKHEIMER, in conclusion, encouraged the committees to search the PNWER website for further information on the Olympics.

CHAIR MCGUIRE advised the committees that at the February 22 event, Alaska will have a featured area at which to display job

opportunities and tourism information on Alaska. She highlighted that Alaska may have the highest percentage of athletes from any one state in the U.S. participating in the Winter Olympics.

[10:39:31 AM](#)

The committees took an at-ease from 10:39 a.m. to 10:43 a.m.

[10:43:54 AM](#)

CHAIR MCGUIRE then announced that the committee would hear a presentation regarding the Alberta oil sands.

[10:44:18 AM](#)

RICHARD MARZ, Member, Legislative Assembly of Alberta, began by stating that the oil sands of Alberta are very important to Alberta. However, he also pointed out that the oil sands are a resource that produces jobs throughout Canada and North America.

[10:44:58 AM](#)

MICHAEL PADUA, Alberta Ministry of International and Intergovernmental Relations, Government of Alberta, informed the committee that although he would be referring to the slide presentation entitled "Alberta's Oil Sands," he would move through the slides in a slightly different order than the printed version. He explained that the oil sands are a naturally occurring mixture of sand, water, and bitumen. Bitumen is a very heavy form of oil. In fact, it takes about two tons of bitumen to produce one barrel of oil. The oil sands formation slopes upward from underground and reaches the surface close to the town of Fort McMurray. From that point, the oil sands are extracted, diluted, and piped to other parts of the province or the U.S. for upgrade to synthetic crude oil. The resource has been known about for years, but the technology to utilize the resource has only recently been developed. Mr. Padua noted that oil sands exist in other parts of the world, but they're not being developed yet. The method of extraction for oil sands, he explained, depends upon the depth of the deposit. At depths of less than 245 feet, the extraction method is open pit mining, and therefore the operation is similar to those for coal, gold, or copper. The sand is extracted and trucked to facilities where the oil sands are mixed with hot water and the bitumen melts out. Then the bitumen is centrifuged and extracted. He shared photographs of the large

equipment used to extract and transport the oil sands and reviewed the costs of maintaining the equipment.

MR. PADUA related that although the most attention has been given to the surface mining operations, it isn't the majority of the resource. The majority of the resource, 80 percent, is too deep for surface mining. Therefore, technologies have been developed to access the resources too deep to surface mine, which is referred to as in-situ mining. He then shared a photograph of an in-situ mining site, which illustrates a smaller environmental footprint. The smaller environmental footprint results in the land being reclaimed much sooner. Moreover, in-situ mining doesn't create tailings ponds like those created with surface mining. Currently, the technology used to extract the bitumen from underground is referred to as steam assisted gravity drainage (SAGD) in which two parallel wells are drilled 10 feet apart and drilled horizontally through the formation. Super heated steam is pumped into the top well, which melts the bitumen underground that flows down through gravity and sucked through the bottom pipe.

[10:49:40 AM](#)

SENATOR WIELECHOWSKI inquired as to the cost differential between in-situ and strip mining.

MR. PADUA said that the costs are probably fairly similar.

SENATOR WIELECHOWSKI then inquired as to why the in-situ mining isn't being pursued since there is such an outcry and concern surrounding strip mining.

MR. PADUA answered that it's definitely heading toward in-situ mining. He estimated that at this point about 40 percent of the resource is being extracted by in-situ mining. He then opined that the future lies with in-situ mining.

MR. MARZ, to provide a point of reference, offered that the open pit mine is comparable to the size of Toronto.

[10:50:33 AM](#)

SENATOR FRENCH inquired as to the relative energy differences between in-situ and open pit mining, specifically which type of mining requires more natural gas to operate.

MR. PADUA said that the energy use is probably about the same because either way the bitumen has to be melted off. With the open pit mining, trucks transport and dump the oil sands in vats of heated water. The water is heated via natural gas. With the in-situ mining, steam is being created and pumped underground. He then informed the committee that there is experimentation of other methods for in-situ mining because burning natural gas is expensive for the producers; it's likely their biggest cost. The alternative technologies being reviewed use solvents or pump oxygen into the top hole, ignite the bitumen, and the burning bitumen melts the surrounding bitumen. There are pilot projects to determine whether the latter is a plausible alternative to burning natural gas.

[10:51:48 AM](#)

SENATOR WIELECHOWSKI inquired as to the amount of thousand cubic feet (mcf) it would take to create one barrel of oil.

MR. PADUA said he will address that in his presentation as well as carbon capture.

[10:52:15 AM](#)

MR. PADUA, returning to his presentation, directed the committees' attention to a map, entitled "Oil Sands - Alaska Comparison," of the physical location of the oil sands. The oil sands deposits underlay about 55,000 square miles, which is about the size of Florida. However, he clarified that the actual size of the disturbed land is a hole the size of the Kennedy Space Center. The map illustrates the portion that would be surface minable while the remainder would be in-situ mining. He noted that about 205 miles is the part that is actually being disturbed at the surface. Mr. Padua acknowledged that it's more expensive and troublesome to extract the oil sands than to extract conventional oil. However, the Alberta oil sands contain 1.7 trillion barrels of bitumen in place and the recoverable amount is about 170 billion barrels. The amount of recoverable barrels places Canada in second place in international oil reserves, when it was recognized a couple of years ago. He noted that as conditions change, the amount of recoverable oil from the oil sands may increase. As illustrated on the slide entitled "World Oil Reserves - Top 18 Comparison," conventional oil makes up only a small portion of Canada's total reserves, while the vast majority of it is oil sands. Mr. Padua then referred to the chart on the slide entitled "Alberta Crude - Future Production." The chart illustrates that conventional

oil production has been declining, while oil sands production is increasing. He estimated that oil sands production will double in the next five years. In 2007 total production for Alberta was 1.9 million barrels per day, which included conventional and oil sands. The total production for Alberta is expected to reach 3.4 million barrels per day by 2017.

[10:55:37 AM](#)

REPRESENTATIVE NEUMAN emphasized that when one discusses carbon reductions and taxes on carbon emissions, it's a global situation. Canada has realized the aforementioned and has used its funds to ensure that it's economical 10 years down the road.

MR. PADUA related that the emissions per barrel from the oil sands are being reduced while the production is increasing. Therefore, total emissions from the province are theoretically increasing because of increased production. To stop that production would eliminate economic growth anywhere because it will always be accompanied by increasing green house gas (GHG) emissions. The question becomes what can be done about [GHG emissions], which is under review, he said.

[10:56:59 AM](#)

SENATOR FRENCH, referring to the slide entitled "Alberta Crude - Future Production," inquired as to which of the oil from the oil sands is in the synthetic crude oil and which is in the non upgraded bitumen.

MR. PADUA clarified that both synthetic crude oil and non upgraded bitumen are oil sands production. He explained that synthetic crude oil is oil sands that have been upgraded to be the same as crude oil, and therefore can be shipped to regular refineries. The non upgraded bitumen is diluted oil sands. He related that Alberta doesn't have the capacity to upgrade all the non upgraded bitumen to synthetic crude, and therefore some of that will be shipped to the U.S. to facilities that will upgrade it.

[10:58:14 AM](#)

CHAIR MCGUIRE mentioned that she, Senator Wielechowski, and Representative Neuman have reviewed some of the processes used to convert coal and natural gases to synthetic crude. She inquired as to the properties of the synthetic crude oil [from the oil sands] and indicated her understanding that synthetic

crude oil is cleaner burning and has a higher commodity value. She asked if that's similar [with the synthetic crude oil from the oil sands].

MR. PADUA related his understanding that the synthetic crude is actually "sweeter" since the sulfur content has been extracted at the oil sands point. Therefore, the crude has a lower sulfur content at the refineries when the crude is being mixed with higher sulfur content resources.

[10:58:59 AM](#)

SENATOR WIELECHOWSKI inquired as to the rough breakeven point with the synthetic crude oil.

MR. PADUA answered that it varies over time. At one point, the breakeven point of synthetic crude oil cost about \$30 per barrel to extract the oil sands. However, in the last couple of years the aforementioned increased to about \$70 per barrel, which he attributed mainly to an increase in labor costs due to a shortage in labor. He noted that many factors are part of the breakeven point, including the price of steel. He estimated that the current breakeven cost of synthetic crude oil to be about \$50 or so per barrel, although it would depend upon each facility.

[11:00:03 AM](#)

MR. PADUA, returning to his presentation, informed the committee that there are 91 oil sands projects of which four are open pit mines and the remaining are in-situ mines. He further informed the committee that \$150 billion was invested in these projects as well as related projects, such as the upgraders, between 2000 and 2008. Another \$142 billion has been invested in the last two years for projects currently under development or projects that will be completed in the next two years. Therefore, the total amount of investments in the last 10 years is \$300 billion.

[11:00:36 AM](#)

REPRESENTATIVE RAMRAS inquired as to the fiscal terms and the certainty surrounding those terms. He further inquired as to whether the prevailing tax regime has been in place and whether the \$150 billion investment was made incrementally over time. He also inquired as to how the taxation issues have been

addressed. He then asked who the major producers of the resource are.

MR. PADUA related that originally the oil sands were developed with slightly better terms than for conventional oil in order to encourage the initial investment. However, once the projects break even, they are on similar terms for royalty as conventional oil. The major players include Syncrude, Suncor Energy, Shell Canada, as well as some smaller companies that are beginning to explore. He offered to provide further information.

[11:01:58 AM](#)

MR. PADUA, returning to his presentation, turned to the economic impact of the oil sands. He noted that although the oil sands are located in northern Alberta, the material and manpower comes from other places. In fact, the Cambridge Energy Research Associates (CERA) confirms that spinoffs of the oil sands had an economic impact of \$30 billion internationally to the year 2008. Given Canada's trade patterns, he suggested that most of that was spinoff to the U.S. Furthermore, the Canadian Energy Research Institute (CERI) projects \$1.7 trillion in economic impact from the oil sands into the Canadian economy, which includes \$167 billion in federal tax revenue of which \$85 billion will go to the Alberta government and \$19 billion to other provincial governments. The CERI also released a report in October regarding the spinoff, specifically in the U.S. economy. Because of increased demand for U.S. goods and services from the oil sands, the U.S. gross domestic product (GDP) will increase by \$34 billion in 2015, \$40 billion in 2020, and \$42 billion in 2025. He then directed attention to the slide entitled "Impacts of Alberta Oil Sands Development on the US Economy" regarding the impact in employment. He highlighted that from 2011-2015 there was 343 thousand person year of employment with declining numbers in the years after that. In regard to Alaska specifically, Mr. Padua referred to the two slides entitled "Impact of Alberta Oil Sands Development on the Alaska Economy." These slides relate that the impact of the Alberta oil sands development on the Alaska economy to 2025 is an increase of \$82 million to the state's GDP.

[11:03:52 AM](#)

SENATOR FRENCH inquired as to which Alaska companies would benefit.

MR. PADUA clarified that the benefit is from increased overall consumption. In many cases, there could be a specific Alaska company that produces specific equipment that's used in the oil sands. In other cases, the benefit is the result of gaining employment in the oil sands that allows them to take a cruise to Alaska or to increase the consumption of Alaska seafood. He acknowledged that these spinoffs aren't only in the oil and gas sector. In further response to Senator French, Mr. Padua specified that CERI developed the aforementioned figures.

[11:04:59 AM](#)

REPRESENTATIVE NEUMAN asked if that change in value added GDP assumes that Alaska will follow the pace and path of Alberta with carbon capture and sequestration.

MR. PADUA related his understanding that the calculation [of the increase in Alaska's GDP] was calculated using GDP input output tables as they have used in the past. Therefore, the calculation assumes the continuation of conditions as they have been over the last couple of years. He explained that the GDP multipliers are reviewed and the associations when there was increase in the GDP in one location and the spillover in other locations, such as with extra investment and extra creation of jobs.

REPRESENTATIVE NEUMAN surmised then that Alaska might learn from Alberta in regard to the value added/synthesis processing.

MR. PADUA noted that the aforementioned wouldn't be counted in these figures. The figures are merely increased consumption in Alberta of the type of products and services that are produced in each of the states. He offered to share the report with those who are interested.

[11:07:15 AM](#)

MR. PADUA, returning to the slides entitled "Impact of Alberta Oil Sands Development on the Alaska Economy," highlighted the person years of employment created in Alaska due to oil sands development. Although the economic impacts are the main reason the oil sands are strategic for Alberta as well as the entire continent, continental energy security is another top factor. Of the companies listed on the slide entitled "World Oil Reserves - Top 18 Comparison," there aren't many friendly and open faces on the list. Furthermore, only 13 percent of the world's oil reserves are accessible to international oil

companies, of which half are in the Alberta oil sands. Therefore, there are opportunities with the Alberta oil sands that just don't exist with say Saudi Arabia oil. He then directed attention to the slide entitled "US Sources of Crude Oil," which illustrates that Canada is the largest supplier of oil to the U.S. As oil sands production increases, Alberta will become the most important source of foreign oil to the U.S. In terms of Alberta's regulatory framework, the resource is owned by Albertans, but developed by the private sector that pays royalties for what is extracted. There is a comprehensive regulatory regime, both provincially and federally for environmental impacts. Mr. Padua pointed out the map on the slide entitled "Crude Oil Pipeline Proposals" illustrates current and planned network of pipelines leading out of Alberta. He highlighted the line specifying the oil that will travel to the West Coast. Currently, practically all of Alberta's oil and natural gas exports are to the U.S., but the line [to the West Coast] provides the potential for export to Asia.

[11:09:53 AM](#)

MR. PADUA said that although the oil sands have been known about for some time, technological developments have allowed for the capitalization of the oil sands. He then highlighted the chart on the second slide entitled "Technology and Innovation are Key," which charts Alberta's public investments in research and development in oil sands and heavy oil. The \$850 million investment for the 2008-2012 timeframe allows Alberta to carry on a lot of research and become a leader in oil sands, heavy oil, coal gasification, carbon capture and storage, and water use and management around the oil sands.

[11:10:34 AM](#)

CHAIR RAMRAS mentioned that Alaska is dabbling in government subsidies to induce gas pipeline development. In doing so, when the state develops proprietary work, he questioned how the state would recover its costs and share it with the producers.

MR. PADUA opined that this type of research is being performed in universities, which have their own commercialization policies.

[11:11:20 AM](#)

MR. PADUA, continuing with his presentation, announced that he would now discuss GHG emissions. He pointed out that there have

been many attempts in the media to target the oil sands as the largest threat for GHG emissions in the world. However, as related on the slide entitled "Oil Sands and GHGs," the oil sands produce 5 percent of Canada's GHG emissions and Canada produces 2 percent of the world's GHG emissions. Therefore, the oil sands are contributing one-tenth of 1 percent of the world's GHG emissions. Obviously, the problem is there, but shutting down the oil sands would make no difference in terms of global GHG emissions. He highlighted that GHG emissions per barrel of oil have been reduced by about one-third since 1990. In fact, some facilities have achieved reductions as high as 45 percent per barrel. Mr. Padua echoed his earlier comments that burning natural gas is expensive and they have every incentive to try and cut those costs, which would also reduce the GHG emissions. He then directed attention to the slide entitled "Canada and the U.S. -- a shared challenge," which illustrates a comparison of GHG emissions from the oil sands versus other U.S. sources of crude oil. Often, it's said that the oil sands produce 3-5 times more GHG emissions than other sources of oil. However, that's when one views only the extraction portion. He acknowledged that extracting the oil sands is 3-5 times more carbon intensive than extracting Saudi Arabian oil. Still, one must realize that the Saudi Arabian oil has to be transported from Saudi Arabia to the U.S. The aforementioned transport occurs via tanker while the oil sands can be piped via pipeline, which is more GHG efficient. [Referring to the slide entitled "Life Cycle GHG Emissions of Crude Oil"] said that the blue section reflects the bulk of emissions, which is produced when oil/gasoline is burned by an automobile. The aforementioned emissions are equal for every source. The [yellow] bar is the differential between the other sources, which is extraction, transportation, refining costs, et cetera. On the whole, Alberta's oil sands produce between 5-16 percent more GHG emissions than other U.S. sources of crude, wells to wheel.

MR. PADUA reviewed a scenario in which the Alberta oil sands are shut down. He reminded the committee that the oil sands are 5 percent of Canada's production of GHG emissions and Canada produces 2 percent of the world's GHG emissions. If nothing is done on the demand side, the oil from the oil sands would have to be replaced with oil from elsewhere. Therefore, he calculated that shutting down the oil sands would result in declining world GHG emissions of .03 percent. He acknowledged that the oil sands have a slightly higher environmental impact in terms of GHG emissions. However, those U.S. jurisdictions that are considering low carbon fuel standards might want to

consider whether national security outweighs that .03 percent difference in world GHG emissions.

11:15:29 AM

SENATOR FRENCH asked if there's a slide for U.S. produced crude oil.

MR. PADUA said that the presentation does include a couple such slides. He then related concern with California, which has introduced low carbon fuel standards that aren't based in science. California deducts its heavy oil from its fuel standards while including the oil sands without any justification, in terms of GHG emission. Furthermore, California's heavy oil produces more GHG emissions than oil sand imports do, in many cases.

11:16:30 AM

MR. PADUA, continuing on the topic of GHG emissions, specified that the problem isn't really oil, but rather is coal-fired power plants. Referring to the slide entitled "Canada and the U.S. -- a shared challenge," pointed out that the blue circle represents GHG emissions from the oil sands; the yellow circles represent coal-fired plants. In Alberta alone, coal-fired plants produce more GHG emissions than the entire oil sands operations. The aforementioned doesn't even consider the many red circles on the map that represent the coal-fired power plant GHG emissions in the U.S. Therefore, addressing the GHG emissions from the oil sands, but not addressing the coal-fired power plant GHG emissions does nothing to reduce GHG emissions worldwide. To address the GHG emissions from the coal-fired power plants in the U.S., Mr. Padua proposed capturing and storing those GHG emissions. He then directed attention to the slide entitled "Confronting Global Issues: Alberta's Climate Change Plan (2008)," which relates Alberta's plan for GHG reduction between 2010 and 2050. The reductions are in the following three components: conservation and energy efficiency, greening production, and carbon capture and storage. He informed the committee that Alberta was the first jurisdiction in North America to introduce carbon pricing, which applies to those large facilities that release over 100,000 tons of CO<sub>2</sub> per year. That's 100 facilities that compose 50 percent of Alberta's CO<sub>2</sub> emissions. In the two years this project has been in place, there has been 10 mega tons of actual emissions and \$123 million has been put toward a fund that can be used for

investment in greening energy production, efficiency, and carbon storage.

[11:18:26 AM](#)

SENATOR FRENCH surmised then that the \$123 million is generated from the price placed on the carbon emissions, and therefore it's coming from producers.

MR. PADUA replied yes, adding that it's being generated by the producers within the province.

CHAIR MCGUIRE expressed excitement regarding the possibility of pairing hydrocarbon development with carbon capture and sequestration technology that's available to grow an energy economy that's clean, safe, and located on free soil.

[11:19:26 AM](#)

SENATOR WIELECHOWSKI inquired as to the status of exploration in Alberta.

MR. PADUA answered that exploration on the oil sands is increasing while it's decreasing for conventional [oil]. He then reviewed the process with carbon capture in which the CO<sub>2</sub> is taken from large points of production, particularly coal-fired power plants, and is transported by pipeline, pumped underground into the same formations where the hydrocarbons were extracted. The advantage of pumping into the depleted formations is that it releases a fair amount of extra oil as the CO<sub>2</sub> is being sequestered there permanently.

MR. MARZ interjected that the [sequestration of the CO<sub>2</sub>] replaces water in some of the wells that are currently in use.

SENATOR WIELECHOWSKI asked if the CO<sub>2</sub> could be used to achieve enhanced oil recovery of the heavy oil as well.

MR. PADUA replied yes, but clarified that would be the case for heavy oil deposits not in the oil sands.

CHAIR MCGUIRE noted that Alaska is struggling with the heavy viscous oils in Prudhoe Bay, and therefore it's appropriate to continue to review ways in which the carbon can help lift out heavy oils.

[11:21:23 AM](#)

SENATOR FRENCH remarked that Mr. Padua is likely aware of the one area of resistance to the natural gas pipeline, which is that it will only fuel more development in Alberta and increase the world's woes with regard to carbon. Senator French opined that major steps in the right direction are being made, and therefore he asked if Alberta is receiving any credit or support from environmental groups.

MR. PADUA said it would be nice to have such support. He noted that an entity called the Aspen Foundation gave an award to the province for its work on carbon capture. He offered to find out more about the Aspen Foundation. Mr. Padua agreed that it's unfortunate that the Alberta oil sands are being targeted as a global-sized disaster, in terms of GHG emissions. He highlighted that the Alberta government has put forward \$2 billion for carbon capture and storage research. Four pilot projects have been announced and if the technology works, they can be applied worldwide. [As specified on the slides entitled "CCS Commercial Scale Projects"], the pilot projects are at an ungrader refinery facility, a coal-fired power plant, converting coal to synthetic gas underground and then injecting carbon, and a pipeline network that will connect the sources of carbon.

[11:25:08 AM](#)

CHAIR MCGUIRE highlighted that for the Swan Hills project, which aims to convert coal into synthetic gas for low-emissions electricity and carbon capture for use in enhanced oil recovery, the Alberta government has committed \$285 million. She asked if there is a private sector partner for the Swan Hills project.

MR. PADUA specified that the actual generator itself is the private sector partner. He explained that the government isn't providing funding until the contract specifying what will be developed is written. He anticipated that the aforementioned will occur in the next couple of months.

CHAIR MCGUIRE asked whether the government is providing the capital infrastructure or providing a match.

MR. PADUA offered to find out for the committees.

CHAIR MCGUIRE said such information would be helpful as she and others review where it's appropriate for the government to be a partner in energy projects, particularly in innovative situations such as with in-situ mining and carbon capture

sequestration. She also expressed interest in incentives that Alberta has done through policy to incentivize the private sector to enter some of these large projects.

MR. MORRISON interjected that there will be presentations at an upcoming PNWER summit on this matter.

[11:27:13 AM](#)

MR. MARZ pointed out that the federal government is also contributing a portion, \$63 million, for the Alberta Carbon Trunk Line.

CHAIR MCGUIRE asked if the aforementioned funds are through Canada's federal stimulus package.

MR. PADUA answered that those funds are separate from the stimulus and are from the environmental funds.

CHAIR MCGUIRE reiterated her interest in understanding where the government is involved in the four CCS commercial scale projects.

[11:28:16 AM](#)

MR. PADUA, returning to his presentation and the slide entitled "Responsible Water Use," turned the topic of water usage. He informed the committees that it takes two to five barrels of water to produce a barrel of oil sands oil. He noted that 90 percent of that [water] is recycled. Although the water being used is from the Athabasca River, there are strict limits in place. Although the limit is 3 percent of the average annual water flow, in 2008 only .06 percent was drawn. As with carbon emissions, the operations are becoming more efficient. Although water usage has been reduced by 40 percent between 2002 and 2007, bitumen production increased by almost 50 percent. Referring to the slide entitled "Tailings Pond Management," he explained that the tailings ponds are necessary to filter the solids from the water. The water on top is reused multiple times to get the solids to settle out. The solids contain toxins that are already present in the ground, but they become more concentrated. Historically, it has taken large mining operations up to 40 years to settle out the solids. However, last month Suncor announced that it has developed new technology that reduces reclaiming tailings ponds to seven years. He noted that the in-situ projects don't produce tailings ponds. The goal is to reclaim all of the land impacted by the oil sands to

its natural state, including the pit mines. To that end, all the sand is stored for use to refill the pit upon conclusion of the project. In order to ensure the aforementioned, a security bond has to be provided by the mining companies. Currently, the reclamation security bond holds \$828 million to ensure reclamation of the land to its natural state. The first reclamation was issued in 2008 to Syncrude for 257 acres.

[11:30:38 AM](#)

CHAIR RAMRAS commented that he was struck by the magnificent way in which Alberta has managed its resources, from which Alaska should learn. He said he was also struck by the difference between the posture of an expanding oil and hydrocarbon province and a province, Alaska, which is in decline. Alaska, he opined, needs a significant paradigm shift from its defensive posture.

[11:31:44 AM](#)

CHAIR MCGUIRE mentioned her wish to have more time because Alaska seems to have much in common with Alberta. She pointed out that Alberta has travelled on the same journey on which Alaska is embarking, that is revisiting oil and gas taxes. Alberta had some of the most attractive oil taxes in the world, went to higher taxes, and now is shifting back. Finding balance between incentivizing industry and growing jobs is a challenge, she opined.

MR. MARZ noted that Alberta's change in royalty structure was done with much support from the electorate. However, the economic climate can change, which can change the electorate's view. Therefore, Alberta has had to review the unintended consequences [of its royalty policy]. He agreed that finding the aforementioned balance is a difficult challenge, although he felt that Alberta is close. He noted that the sliding scale structure that is in place results in the citizens take increasing as prices rise and vice versa. Therefore, with the new structure and the recession many companies were actually receiving more than before.

CHAIR MCGUIRE pointed out that Alaska has a similar tax system to that of Alberta. She recalled past discussions with Alberta.

[11:34:27 AM](#)

REPRESENTATIVE NEUMAN, recalling Senator French's comments regarding environmental concerns, pointed out that when

synthesis fuels are created coal is being used for indirect and direct processes. He further pointed out that the U.S. Department of Environmental Conservation (DEC) classifies [synthesis fuels] as biodegradable because there are no aromatics, sulfurs, and most of the carbon has been removed. Therefore, any spills don't hurt the environment since it's a biodegradable product.

[11:35:32 AM](#)

CHAIR MCGUIRE remarked that perhaps the PNWER conference should hold a work shop on the various types of transportation fuels, which countries are using them, and how Alaska could grow that market.

[11:36:06 AM](#)

MR. MARZ related that development is expanding outside of Alberta into Saskatchewan. "As you can see by the slides, it's just not oil sands or Canadian oil sands, it's North American job sands," he highlighted.

[11:36:45 AM](#)

CHAIR MCGUIRE thanked the presenters for taking the time to come before the committees.

[11:36:58 AM](#)

#### **ADJOURNMENT**

There being no further business before the committees, the joint meeting between the House Special Committee on Economic Development, International Trade and Tourism and the Senate Special Committee on World Trade and State/Federal Regulations was adjourned at 11:36 a.m.