HANSARD

NOVA SCOTIA HOUSE OF ASSEMBLY

COMMITTEE

ON

RESOURCES

Tuesday, March 24, 2015

LEGISLATIVE COMMITTEES OFFICE

Department of Energy
Geoscience Research for Nova Scotia's Offshore Growth

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Resources Committee

Mr. Gordon Wilson (Chairman)
Mr. Keith Irving (Vice-Chairman)
Mr. Lloyd Hines
Mr. Bill Horne
Ms. Margaret Miller
Hon. Pat Dunn
Mr. John Lohr
Hon. Sterling Belliveau
Ms. Lenore Zann

In Attendance:

Ms. Kim Langille
Legislative Committee Clerk

WITNESSES

Department of Energy

Mr. Murray Coolican, Deputy Minister
Mr. Sandy MacMullin, Executive Director, Petroleum Resources

House of Assembly
Nova Scotia

HALIFAX, TUESDAY, MARCH 24, 2015

STANDING COMMITTEE ON RESOURCES

9:00 A.M.

CHAIRMAN
Mr. Gordon Wilson

MR. CHAIRMAN: Everybody is here so we may as well call the meeting to order. My name is Gordon Wilson and I'm the chairman of the Resources Committee for the Province of Nova Scotia.

The committee will be receiving a presentation from the Department of Energy regarding geoscience research for Nova Scotia's offshore growth today.

I'd ask the committee members at this time to introduce themselves for the record by stating their name and constituency, starting with Ms. Miller.

[The committee members introduced themselves.]

MR. CHAIRMAN: Thank you folks. I'd also like to remind everybody to please turn their cellphones to vibrate or off. I'd like to also remind the members and witnesses to please wait to speak for the chairman to recognize them to allow our Legislative TV to be able to pick up everybody on the microphone.

Today on the agenda we have a witness presentation and we have some committee business to deal with also. So if at all possible, we'll try and wrap up our questioning by 10:45 a.m. to allow for some time to deal with the committee business.

I'd like to welcome our officials from the Department of Energy. I'd ask them to introduce themselves and begin their presentation.

MR. MURRAY COOLICAN: Mr. Chairman, good morning to the members. First of all I'd like to thank you for having us here today. With me is Sandy MacMullin who is the Executive Director of the Petroleum Resources division of the department. We are fortunate to have Sandy here and fortunate to have Sandy as an employee of the government, playing a leadership role in this area. He has been a key player in the geoscience work that we've done and has helped us to attract significant investment in the offshore. He was instrumental in the development and marketing of the offshore through the Play Fairway Analysis. I am going to talk a little bit about that and then if you have any questions, Sandy will answer them.

This is the said Play Fairway Analysis so if you've never seen $15 million, this is what it looks like. We don't cart this around too much as it's available electronically; if anybody wants to get a copy electronically, they can. This is free of charge to anyone in the public, anyone in industry. Anyone who wants to get hold of this, it's public information.

MR. COOLICAN: Sandy's team continues to build on our province's successful approach to developing the offshore. We are conducting new geoscience research and we continue to market the results to oil and gas companies around the globe. This is an approach that has been supported in government by all the Parties who are represented here today.

Chris Spencer, who is the Executive Director of Business Development and has responsibility for our work on the economic benefits to the province from offshore developments planned to be here today but was unable to make it, due to the weather. He was driving back from central Canada and decided that getting blown off the road was not something he wanted to do.

We do work with industry, citizens, and all levels of governments to ensure the innovative and responsible development of our energy resources. Our offshore energy sector provides strong opportunities for growth in Nova Scotia and could account for significant economic growth in the years to come.

Our objective has been to attract world-class oil and gas companies to explore and develop our offshore. Six of these major players have recently chosen to invest in Nova Scotia, led by Shell and BP. These companies are global in their exploration activities, and so Nova Scotia competes against other prospective offshore hydrocarbon basins around the world. These companies look at all the potential exploratory areas around the world and

based on the information they have, they make a decision. They have priorities for their exploration budgets and you either make it on their list or you don't make it on their list. Their decision to come to Nova Scotia and their decision to invest over $2 billion speaks volumes about their confidence in our vast resource potential.

Today I would like to provide you with an overview of our offshore geoscience work, which is laying the foundation for future success in the offshore. I'm going to talk about four key areas: the deep water exploration activity; new offshore geoscience work; I'm going to talk a little bit about natural gas in the Sable Island area; and also about proposed LNG export projects because of the relationship between the two.

As I mentioned, so far we've attracted just over $2 billion in offshore work commitments by Shell and BP. Shell Canada has completed its seismic work and is reviewing the data collected over 10,000 square miles. Their area includes the yellow blocks with the Shell logo in the middle. Shell is on schedule to start drilling later this year. Also, BP completed one of the largest geoscience programs in the world last year at 7,400 square kilometres and estimates they may be in a position to begin drilling exploratory wells in 2017. They're the green squares with the BP logo in the centre of them in the offshore. Combined, these seismic programs represent at least $300 million in expenditures in 2014 and 2015.

In addition to BP and Shell, four new world-class oil and gas companies have been attracted in the last year. Shell brought two other companies - Suncor, a Canadian company, and ConocoPhillips, from the United States - to their exploration team in May last year. This past November, BP announced two new partners to join their project: Hess from the U.S. and Woodside from Australia. As I mentioned, this demonstrates the confidence and interest of industry in doing business in our province.

This confidence has been built upon the foundation of the Play Fairway Analysis. I mention it as a foundation because it has required subsequent geoscience and also aggressive marketing of this information. I use the term "marketing", but in fact, we don't buy a lot of advertising to do this; in fact, I don't think we buy any advertising to do this. It's all about providing the information that we have to the companies, scheduling meetings with them and more meetings and more meetings.

There are a number of shows that we attend where companies are looking for this kind of geoscience information. The Offshore Technology Conference in Houston is an example where we attend and have a booth and talk about our work. It's called marketing, but it's really just connecting with people and building relationships, and making sure they have the latest information that we have available to them.

As I mentioned, the Play Fairway Analysis was a $15 million investment which created this atlas of Nova Scotia's offshore. This work started under a Progressive Conservative Government in 2007, followed by investments by the NDP Government and now the Liberal Government. The original analysis determined that our offshore is rich

with potential, including 8 billion barrels of oil and 120 trillion cubic feet of gas. You may have noticed the John Ibbitson article in the *Globe and Mail* on the weekend - I find it interesting there was not a single mention of this. Not a mention of the $2 billion in exploration commitments by BP and Shell. I just wonder about people who want to talk about energy in Nova Scotia who don't take the time to find out what's going on.

This information that we've collected reduces some of the risk for potential explorers and improves the opportunities for Nova Scotia. While we continue to work to improve our regulatory regime and the benefits to Nova Scotia policies, our primary focus has been on the geoscience. Based on our conversations with the companies, that is what has attracted them to make their investments. We know the approach works and we're doing more to attract further interest.

One of the things when we're talking about offshore geology, I always like to talk a little bit about Morocco. If you know a little bit about our geological history - and this is about all I know - Morocco and Nova Scotia used to be connected and subsequently split apart. The work that we do looks at the geological history of the area over the past 200 million years, so people talk about politics as a short-term business, energy is a long-term business and it's kind of summed up in that.

Morocco shares historical significance but also geological significance with Nova Scotia, so we're looking at what has been discovered in offshore Morocco to tell us more about our own resource potential. We're actively working to build a technical relationship with Moroccan authorities as part of our geoscience strategy. This information from Morocco will expand our knowledge and greatly inform our work in the area. The work that we've done has already encouraged investment and further exploration activity in offshore Morocco, so they're interested and we're interested because we both benefit from the work that we're doing.

I talked about the new geoscience work that we're doing. In May 2014, Premier McNeil announced four years of new geoscience funding. Nova Scotia is investing $12 million in new geoscience data and marketing. This will bring provincial investments in offshore geoscience to $33 million by 2017. This ongoing investment, in itself, is sending a strong message to the industry about our confidence in the potential of our offshore resources and our support for this activity. It has also allowed us to plan a longer term geoscience program.

Our new geoscience work has focused on expanding the work of the original Play Fairway Analysis in three key areas at the moment. The first is the Laurentian Sub-basin, the second is southwest Shelburne Basin and the third is Sydney Basin. We've also informed existing and potential investors of our plans for 2014 to 2017, in advance of the calls for bids.

This map shows you the areas where we've signalled to the industry where the calls for bids are happening and you can see the way in which the areas of our geoscience work

fit in with those areas. I just want to also point out that if you look at the work in the Sydney Basin, our circle there goes beyond the Sydney Basin and crosses over into Newfoundland and Labrador, and comes close to France. The reason for that is that the geoscience doesn't pay attention to the boundary lines. If we can learn things from the other side of those lines that will apply to the area of potential exploration, that's important. You can also see that in the southwest, in the Georges Bank area.

Our intention is, as it is government policy and passed by the Legislature, there will be no drilling in Georges Bank, but some of the geoscience information and knowledge that we gain in that area will say things about the area where drilling will be allowed to the east of that.

One of the things that we've learned is that it is important to signal from the regulator where the calls for bids are going to happen and do some additional geoscience in coordination with that. We work closely with the Canada-Nova Scotia Offshore Petroleum Board on defining a schedule for the call for bids. As part of this process it's important for industry to have enough time to assess an area's potential, so that's why we've developed a predictable schedule and planned our geoscience research accordingly. This also applies to the seismic industry as it needs significant time to build a business case to acquire new data. For example, with the 2015 call for bids scheduled to be released next month, our 2014-15 geoscience work focused on the southwest deepwater in anticipation of this call.

This year our main efforts will focus on the Sable Island area and its deepwater, as well as the Sydney Basin. We're also doing some very interesting work both inside and outside of the call areas to understand the big-picture possibilities of offshore Nova Scotia. Our intention here is to continue to work to reduce the geological uncertainty, a big parameter that the oil and gas sector assesses in evaluating international deepwater investment opportunities.

As you can see, we're taking a well-planned and coordinated approach to our geoscience research plans and this is where it helps a great deal to have a longer term commitment of funding to allow us to plan ahead for this research.

This is a map of the area around Sable Island and there has been a lot of talk about gas in this area. In the darker green is the Sable project and you see there are six fields, five of them have been developed. The red lines don't show up all that well but they show the flow lines between the fields and then the export pipeline to landfall, which I think is somewhere in Lloyd Hines' riding.

Deep Panuke is on the left portion of the map with its pipeline to landfall represented by the orange line. The discovered and undeveloped gases are the grey and small yellow polygons. The large yellow are two exploration licences from Shell, which are labelled EL 2427 and 2428. What's interesting here is that there is unexplored natural gas potential located near existing platform and pipeline infrastructure.

In 2011 Shell published a technical paper attributing on an "unrisked" basis, 15 trillion cubic feet in more than 50-plus leads in this region. So to give you an idea of 15 trillion cubic feet, the Sable project is going to be anywhere from 2 to 3 trillion - closer to 2 trillion cubic feet. When we talk 15 trillion cubic feet that could be the equivalent of several Sable projects. What it means is that there are opportunities for new gas to be found so that the Sable area continues to be attractive for future development. While the Sable and Deep Panuke projects may be approaching the end of their expected production cycles, there remains a real opportunity for further natural gas from the Sable area of our offshore.

We have the benefit of gas supply, we have infrastructure and we have proximity to global markets. You add to that the potential for four LNG projects on the horizon and domestic natural gas demand, it's expected that these reserves could be of interest. So there are now four proposed LNG projects in the works which have been made public. Again, the existing infrastructure, the untapped significant discovery licences and other unexplored reserves are attractive to them.

They are also examining gas from the United States, gas from western Canada and gas from our offshore. All of these take advantage of existing infrastructure or pipeline rights-of-way and can get gas to Nova Scotia. I didn't bring the map but there's a map of North American gas pipelines, and we're connected to the North American system so there are existing pipelines and rights-of-way from western Canada to Nova Scotia. There are existing pipelines and rights-of-way from United States gas fields and Nova Scotia. The issue is the cost to get it here and access to those supplies. Then, as I've mentioned, we have the existing pipeline infrastructure from offshore.

There are three proposals for LNG terminals in Guysborough County: two in Goldboro, which are represented by the A on that map; then the third is in Melford by H-Energy, and I think that's the C. Australia-based Liquefied Natural Gas Ltd. purchased the Bear Head LNG project outside Port Hawkesbury, which is the B. They recently announced they have obtained nine of the 10 initial Canadian federal, provincial and local regulatory approvals required for their project. These communities have been very supportive of these projects. Industry and government have been working with the Mi'kmaq and taking steps to ensure there is a trained workforce in place when these projects proceed.

In addition to these projects, LNG Nova Scotia recently announced it proposes to move up to 250,000 tons per year of LNG to Caribbean markets. This is approximately one-sixteenth the size of a 4 million-ton per year Bear Head project. If all of these projects proceed, the total investment could exceed $15 billion - a welcome boost to Nova Scotia's economy, bringing many local jobs.

This is a really interesting map about sailing distances because it's not really intuitive. When you consider that the LNG is shipped overseas via tanker, sailing distances to key markets become a consideration when deciding where to locate a project. In North America, there are LNG facilities in the Gulf of Mexico and there are facilities proposed for British Columbia.

While we may not be closer to all markets in Asia, we are closer to some markets of Asia; for example, India. We are also obviously closer to European markets. When you consider the geopolitical uncertainty there, some countries like Germany are looking for secure sources of natural gas. I also find it interesting that we are closer than the Gulf of Mexico LNG facilities to places in South America like Argentina. It's not a significant advantage, but it is an advantage.

The next few years will likely see an increase of global LNG export capacity and we're taking steps to ensure our province is prepared to seize this opportunity. History seems to be repeating itself. There was a time when there was skepticism about our offshore. The major oil and gas companies weren't interested in Nova Scotia. It took people like Sandy and others - challenging this and asking what could be done - to understand that we could either be a part of the problem or part of the solution. It was this chain of positive thinking that led to the Play Fairway Analysis and $2 billion being invested to explore our province's oil and gas resources.

While some skeptics, and there are some, might question whether these LNG projects will ever proceed, we are making efforts to help them proceed. Collectively I'm working with my colleagues around government, and this chart indicates some of the different parts of government that are involved to determine how we can help these projects to succeed, subject to the proper regulatory approvals.

Of course there are challenges for these projects, but we believe that Nova Scotia is well positioned to seize the opportunity that LNG provides. LNG's success will also bring renewed interest in our offshore gas. I talked about the 15 trillion cubic feet potential around Sable Island; you combine that 15 trillion cubic feet with the interest in LNG and the LNG creates a market for the 15 trillion cubic feet, and the 15 trillion cubic feet creates supply for the LNG projects. So we're working hard to try to make both of those things work.

As you've heard, our strategic approach to developing our offshore has brought some early success. The geoscience research and marketing has attracted $2 billion. We have opportunities with known offshore natural gas supplies conveniently located next to existing infrastructure to get the gas to markets. We're well-positioned to take advantage of LNG opportunities and compete on a global scale - creating further interest in the development of our offshore - but we will not consider it success until we have a significant find offshore, and a decision to invest in development of those reserves.

We are on the right track to bring new development and the potential to bring economic prosperity to our region. Thank you for your time and we're happy to take questions.

MR. CHAIRMAN: Thank you very much, Mr. Coolican. You have a captive audience on what is a very exciting and interesting industry, and probably a very confusing industry also - not having to go through that book. (Laughter)

I'll open the floor to questions. Mr. Dunn.

HON. PAT DUNN: Just a couple of questions from some of the comments that you made. What conditions, if any, might arise from going beyond that circle like you were saying towards Newfoundland and Labrador, France - any complications for this province with regard to investigating and studying?

MR. COOLICAN: Well I think the first thing is that we co-operate with those jurisdictions, so we work with them. Often what we're using is information that they are prepared to share with us, so it's a co-operative arrangement and we're certainly prepared to provide them with information in return.

MR. DUNN: I guess this question is about the infrastructure that is required to move this LNG gas, is it primarily by rail, by water, by road? What steps will be taken in the future or immediately with regard to transporting this?

MR. COOLICAN: There are three fundamental pieces of infrastructure. One is pipeline infrastructure to get the gas to the liquefaction facility. The second is a liquefaction terminal which is where the gas is cooled so that it forms a liquid and there will be some storage there as well. The third is a deepwater port because the liquefied gas is put onto LNG tankers and then shipped to market. It would be very unlikely to have any of the gas shipped by truck or by rail. It's less expensive by pipeline and as I mentioned, we have existing pipeline rights-of-way to the locations that have been selected, with one or two exceptions - just minor additions that need to be made in the area where the facilities are going to be located.

We have deepwater ports. There would obviously have to be some investment in the ports, but there's deep water there, and the pipeline infrastructure. There is a community in that area which welcomes this kind of development.

MR. DUNN: Thank you.

MR. CHAIRMAN: Mr. Belliveau.

HON. STERLING BELLIVEAU: Certainly, I hope I have the opportunity to ask several questions so I'll start with my first one. Deputy Minister, you made reference to that large book there, $15 million for a study, and I think I can look back in Nova Scotia and there is at least five or six generations of local knowledge of that particular fishing ground. I want to kind of set that as a backdrop as I move into my question and I'll ask the boogeyman question here.

Knowing my background, the fishing industry has concerns. I don't have to mention about the major spills around the world and we observed one in the Gulf of Mexico several years ago. There is some sensitivity about dispersants that are being used and to me, there has to be a clear answer from the industry on how that is going to develop. To

answer the question to the fishing industry and the tourism industry on if there's a major spill, is the industry confident the equipment can be on site and be cleaned up and have no environmental damage, especially to that water column because those five generations of communities around Nova Scotia understand what's in that water column. Can you answer that question for the public?

MR. COOLICAN: I think the first line of defence is prevention and the Canada-Nova Scotia Offshore Petroleum Board is a very strict regulator with a very good track record in both safety and in environmental regulation. I think the industry players that are engaged in this have good track records. The obvious one is BP that had the major incident in the Gulf of Mexico. I would say that based on our conversations with BP but also with others, that BP has learned significant lessons from that incident so their operations are better prepared to prevent the kind of accident that happened in the Gulf of Mexico. I would say that the industry as a whole has co-operated one with the other, which is always an interesting challenge in that industry. They are co-operating on learning the lessons that happened from the incident in the Gulf, so prevention is really the first key to that.

The second thing is what happens if there's an accident. One of the key issues that came out of the Gulf of Mexico incident is the blowout preventer and also moving the equipment in to deal with a blowout after it has occurred. The industry is taking steps to ensure that that equipment is available to whatever company has the incident, as quickly as possible.

You mentioned the use of dispersants. Often dispersants is a tactic that's used especially in the early stages of a blowout. It's an important piece of enabling the company to put a cap on their equipment to stop the blowout. The companies need to demonstrate that the use of dispersants will be more helpful than the alternative.

The other thing you would probably be aware of is that the companies have also been asked - Shell certainly has - through their environmental assessment process, they have been asked to model what would happen under various spill scenarios, what the trajectory of the oil would likely be and what the likely impacts are going to be.

I also know that the companies are working with the fishing community, they are talking to them. They were talking to them during their seismic work, they coordinated their efforts to make sure there was as little conflict as possible and they're continuing that process as they begin to approach their drilling operations.

MR. CHAIRMAN: Thank you. Mr. Horne.

MR. BILL HORNE: Thank you for presenting this today. I kind of like the offshore and would like to see it maintained over the years with good quality preparations in health and safety and that sort of thing, environmental issues.

Before we go on, I'd like to ask a question about the lines that you showed up here, are they all well-defined now and agreed upon by the provinces and Saint-Pierre and Miquelon - are those the agreed boundaries?

MR. COOLICAN: The simple answer is yes. I wouldn't say we're happy but that's - yes.

MR. HORNE: My question today is to talk a little bit about the benefits packages that you deal with with the offshore boards and with companies that do find oil or gas. I assume that BP and Shell are interested in more oil than gas. Has that benefits package for the province been changed over the years?

MR. COOLICAN: I'm going to answer that in a number of ways. First of all, I'll answer the second part of your question first. The primary interest that BP and Shell have in the deepwater is oil, based on the work that was done in the Play Fairway Analysis, but also actually the BP bid is a good example of the four parcels that BP picked up were up for bid the previous year when Shell picked up their four parcels, their first four parcels in that area.

We did some subsequent geoscience work and a good part of it was done by one of our employees in the Department of Energy, a fellow by the name of Adam MacDonald. He did additional geoscience work in the area that BP picked up the next year with a bid of slightly over $1 billion, the biggest bid in Atlantic Canadian history. It was a very good example of - you can have work like the Play Fairway Analysis done, but the industry is always looking for further information; what have you got that is new? The work that Adam did was new and led to a significant investment. I think for Sandy and myself it was one of our proudest moments to see that a lot of this work has been done by external consultants but Adam made a major contribution to that work.

On the benefits side - I'm sorry that Chris couldn't make it because that's the area that he is looking into. The approach that Nova Scotia has taken has tended to be one that local business has to be competitive in order to win the business; they have to have the skills and they have to be competitive. But all things considered, if they are competitive and they've got the skills, then Nova Scotia companies and workers should get the work. Over the last number of years with the downturn in the Nova Scotia offshore, that has served the province well because the companies that earned business under that policy have continued to work in the offshore in other parts of the world. They learned how to compete and they've continued to compete, and that has been important.

With exploration comes some benefits but this area of expenditure is not as significant as the expenditure that comes from development and the benefits that come from development. We're continuing to monitor what the companies are doing and to ensure they are giving Nova Scotia companies a full and fair opportunity to bid during the exploration phase. We have people in our office who are helping Nova Scotia companies to make connections. We organize a Nova Scotia presence at the Offshore Technology

Conference in Houston every year and at other shows but with that show in particular there are a number of Nova Scotia companies that come with us and are introduced to the oil and gas companies, if they don't know them. We support them while they are there, to help them to get business.

Looking further out, once we had the bids from Shell and BP, we decided that we needed to plan for success so we have started to do some work on what our benefits policy should be, what are the opportunities from the kind of development that we expect to see from the deepwater offshore; I'll ask Sandy in a minute to talk a little bit about what those might be. We are looking at the benefit policies that we followed in the past, we've been looking at the benefit policies of Newfoundland and Labrador, Norway, the United Kingdom and other countries around the North Sea, to look at what has worked for them and to see whether we need to make some changes to our policy to make sure we can take the best advantage of what's happening.

Some people have said to us, well you know it's a long time, Shell hasn't found anything yet, BP hasn't found anything yet. Our answer to that is that again this is a long-term business and for us to be ready, we felt we had to start right away. We are doing that work so that we can be prepared to have a benefits policy that will work in the interests of Nova Scotians and help to ensure the successful completion of the projects.

Sandy, do you want to talk a little bit about the kind of developments we're likely to see?

MR. SANDY MACMULLIN: For example, we think it's likely if there's an oil discovery in the deepwater that it will require a floating production, storage and offload vessel and that tends to be a fairly self-contained piece of equipment. One of the things that we're looking at are the kinds of very specific pieces of equipment that are necessary in the fabrication of that unit, they're not necessarily all made in one location, globally. What are the kinds of goods and services, in a success case, that it actually makes sense to source locally in Nova Scotia that either you can't get enough of it now or you don't have it now? And to identify those opportunities so that we can then turn that around and educate the businesses in Nova Scotia that may then choose to invest in the new opportunity that's coming.

Our thinking is more, rather than give a person a fish, teach them how to fish when it comes to deciding on how to make investments in the offshore. Our strategy is to identify the fabrication opportunities and the service supply opportunities that actually make sense to locate geographically in Nova Scotia, and then work with Shell and BP on a success case and their local service supply sector to encourage that to happen.

MR. CHAIRMAN: Mr. Lohr.

MR. JOHN LOHR: Thank you for your presentation, Mr. Coolican. My question is sort of a general question on something you didn't address and that is the recent change

in global energy prices in the downturn or the reduction in cost of oil. I'm just wondering what impact you would see that having on the offshore exploration of these companies. We can see out West that they're retracting some of their investment plans due to the changes, so I'm just wondering if you could outline what you see happening in Nova Scotia's offshore as a result of that.

MR. COOLICAN: That's a good question. Both Shell and BP have indicated that they were going to be continuing with their offshore exploration in Nova Scotia and they have not indicated that they plan to slow down or change their schedule as a result of world energy prices which, in itself, is indicative of the confidence that they have in this opportunity.

I should add that the drop in price had already started when Hess and Woodside made their final commitments to BP, so there were eyes wide open. There are some who project that the drop in prices and the drop in activity globally will decrease some of the costs that they would otherwise face here so we might get more drilling activity for the buck than previously. It might mean that the companies are a little tighter when it comes to negotiating with suppliers, whether they're local or from somewhere else.

I should also add that the companies take a long-term view of this kind of activity so the change in oil prices would be a pressure on their current exploration budgets and that might impact others who are looking at bidding, but it hasn't affected Shell and BP. But when they think about production they're looking eight, 10, 12 years out, and people familiar with the industry have seen prices go up and down. When we first heard stories about the drop in oil prices and how shocking it was, I was in shock by a couple of stories that said, we haven't seen oil prices this low since 2008. Well, to me, that's like yesterday, so prices do go up and down. Since I've started paying attention to the energy industry quite a few years ago, there have been quite a few ups and downs.

One of the things that's often interesting is that the oil and gas industry always has a forecast of oil prices that looks like a hockey stick. They tend to be optimistic, but they are taking a long-term view of the opportunity here.

MR. LOHR: Do you see that possibly changing the bidding structure or the way they bid for these parcels as you parcel them out in the next few years that would reduce the amount of exploration parcels - the amount of money coming in from the bids for these exploration parcels?

MR. COOLICAN: The way it works is that they make work exploration commitments. The bid that Shell made, which was for the first four parcels, which was $970 million - that commitment was that they committed to spend $970 million in exploration over the six-year period of the licence. That money doesn't come to government. It's not money they put down on the table. It's money that they commit to spend on exploration.

Any amount of that which is unspent, 25 per cent would then go to the government. So if at the end of the six years they had spent nothing, there would be approximately $250 million going to the federal and provincial governments against their unspent work commitment.

One might anticipate that over the next number of years, if exploration costs come down, and if exploration budgets are such that there's less competition for the lands, there might be a reduction, but that depends. If Shell has some success, we might see the opposite happening.

MR. CHAIRMAN: Ms. Miller.

MS. MARGARET MILLER: Thank you so much for your presentation. It's so great to hear the excitement in your voice about the potential of this industry and the future of Nova Scotia involved with this. My question is about seizing the opportunity. So when you talk about that for LNG, what is the government doing to help make this happen?

MR. COOLICAN: The first thing that we're doing is that we're in regular contact with the proponents to talk to them about their organization and how they're proceeding. We are coordinating the different government departments that are involved to make it easier for these proponents. The Department of Energy is working closely with these other departments. In particular, Nova Scotia Business Inc. has been very involved in terms of land acquisition and introducing the proponents to the various communities that they're interested in and helping them do site selection. Mr. Hines probably knew them already, but I think NSBI would have played a role in introducing the proponents to Mr. Hines when he was warden of the county in Guysborough. That work is going on.

Sandy in particular has played a role in two facets. One is helping them to have a better understanding of the gas supply potential in the offshore. He and his staff have also helped in identifying some of the pipeline opportunities to bring gas here from elsewhere. We don't play as big a role there, but we have played a role to help them in that area. These are large projects, and to my knowledge there are no requests for government assistance other than basic infrastructure and acquiring land, that kind of thing.

MR. CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: I find this simply fascinating because of the importance of this project in the department and the concerns that have been raised over the last several months, that we do not have a full-time minister. My question is regarding - many of the communities that I correspond with talk about what are the timelines? I know if you read through a lot of this documentation, there's a lot of reference to the year 2015 when a lot of these decisions are going to be made. Yet, when you talk with community leaders and municipal leaders, there is a concern. To me when you are talking about exploration and doing these large projects, you have to have deepwater ports and there's a limited amount

across Nova Scotia. That's a large parcel of property from basically the whole length of Nova Scotia that you're talking about.

My concern is that your department, with an acting minister, carrying on these discussions with the communities - the communities want to know if they are somewhat on the front lines as a potential candidate. There are investments they have to do for sewer projects for having access to water, which is a valuable question and they are interested if they are part of that scenario, if they are going to make the investments.

I guess my question in general is, is your department actively involved in having the discussions? What does this look like and can you kind of highlight some of the timeframes around that scenario?

MR. COOLICAN: First of all, Minister Samson has come to the department with a good background in the issues, partly because of his role as the Energy Critic for his Party when they were in Opposition. I think also, because of his role as a member of the Legislature from that part of the world - if Mr. Hines is any indication - they have a strong interest in what is happening in this industry and watch it carefully. I also think there are good linkages between his portfolios of Economic and Rural Development and Tourism and responsibility for Nova Scotia Business Inc. in particular and we work closely with them. I would just say that over the months he has been the minister, any time he has been needed he has been available. He has been knowledgeable and he's a good decision-maker.

In terms of the other questions, I think there are a number of aspects of that. First of all, for the Shell drilling that is happening in 2015, we worked with a number of the communities as well as with Shell, to help introduce one to the other, to talk about the potential and the exploration phase for supply-based opportunities. The decision Shell made was to do their supply base in Halifax so that limited the opportunities for other communities. But we made sure the introductions were made and we helped to make sure that if there was a community that had not made a contact with Shell, any that contacted us we made sure that the contact with Shell was made.

In terms of more general aspects, Shell had to go through an environmental impact assessment for the well they are drilling. That involved contact with the Mi'kmaq, it involved opportunities for local communities to become aware of what was happening. I know that Shell has been meeting with those communities.

I think also there has been work to liaise between the fishing community and the proponents. In the first case being Shell, as I mentioned earlier, they were involved in the seismic work but they have also been involved in the environmental impact statement and Shell has been consulting with fishermen as they go along.

BP is not as far advanced as Shell, partly because they started a year later, but also their program is taking longer to get to drilling than the Shell approach has. BP, for example, has not yet been through the environmental impact assessment that will be

required for their drilling operation. There are some communities saying, we've had lots of attention from Shell, we haven't had much attention from BP. They will, but it hasn't happened yet because BP is behind Shell in their planning and they have a longer time frame.

MR. CHAIRMAN: Mr. Irving.

MR. KEITH IRVING: Thank you for the informative presentation. I have two questions, one is a short snapper, if I may, because the curiosity is killing me here. Where does the name "Play Fairway" come from? Is that advice for my golf game? (Laughter) Can you explain what that means?

MR. COOLICAN: I never play on the fairway so I'll let Sandy deal with it.

MR. MACMULLIN: A "play" is a geological concept so it's jargon in the industry - what are you chasing after, this is my play. A fairway is relating to the golf term, you want to keep it on the fairway, you don't want to be drilling out where you don't want to hit your golf ball. It's just combining a little bit of geology with a little bit of golf.

MR. IRVING: Okay, thank you very much. We obviously have to manage expectations. This is a resource play, but potentially there's a considerable prize here. I'm wondering in terms of the benefits to Nova Scotia long term if we were to hit something significant. Just by coincidence, CBC played the story of Norway's trust fund or whatever that they've built up in contrast to Alberta and sort of the management of the economic benefits. I got the sense it was royalties, but I may be wrong on that and you may have some information to share there.

My question is, how are royalties set and when are they set? Is that something we should be preparing ourselves for before a find? Do we have a lot of flexibility in the level of royalties that we garner in a project? Can you shed some light on how Nova Scotia would determine its royalties if it's set, whether it's something you set after the size of the find?

MR. COOLICAN: I'm going to say a few words and then I'm going to turn it over to Sandy for some of the detail. The first point you made is about expectations and I think that's very important. Every now and then, the oil and gas companies will say, we haven't found anything yet, just relax and then they get exuberant when they start talking about the project. It's interesting, they're quite confident, but they also want to manage public expectations.

I think one of the things we have done is to try not to overstate what the opportunity is, but at the same time we need to prepare for it, we need to do our research now. We've tended to be perhaps a little low key about the opportunities and what might happen than some have expected. I think it's important to keep reminding people that there are

challenges - as I mentioned to the LNG projects, for example - but we need to move forward with quiet confidence, is the way I would put it.

The second thing in terms of benefits is there are both the economic benefits and there are the royalty benefits and there's often a trade-off between those two. One of the things that's important to industry is that they have an understanding of what the rules of the game are. The Province of Nova Scotia does have a royalty regime. It's one where because we are dealing in a frontier area, there is a higher risk to the companies when they first start. We've designed a regime that recognizes the greater risk of the first project in an area, but allows Nova Scotians to benefit more from the second project. It's also a regime that's based on if the company is successful in making profits, Nova Scotia will share in that success. I'll get Sandy to add a little bit more to that.

The other issue that you've raised is the question of what's happening in Alberta and the example of Norway. That's something that the province has considered before and I think it would probably be a good idea to have another discussion about how we respond to that.

If you look at the province's financial situation over the last six, seven years, there has been a drop in revenue to the province from offshore royalties that represents about a 6 or 7 per cent drop in revenue for the province. That has happened over five or six years. Alberta is dealing with a 17 per cent drop that happened in a three-month period of time, so it's a little more dramatic, but we shouldn't forget that we ourselves have been through the ups and downs of this. I think Norway provides a good example of making sure you take the benefits from a non-renewable resource like this and make sure that those benefits continue to be there for future generations. Sandy, do you want to add something on the royalty issue?

MR. MACMULLIN: Maybe just a little bit. The generic royalty regime was put in place - it was announced in 1998 so it has been around for quite some time, and as Murray said, one of the things that was an uncertainty for the oil and gas industry is just when we come in and make a discovery and we start to pay royalties or taxes, government goes in and changes the rules on us and so that's unpredictable. So one of the things that was built into the regime from the very beginning was - yes, government will likely change the fiscal take over time once an area is better known and this is how it's going to happen.

So what happened was the first project in an area that is high risk - we consider high risk pays a maximum of 20 per cent of the profit, but for the next project that comes in in that area after it has been de-risked and infrastructure is put there, it will go to 35 per cent, so almost twice the amount. So it has already been built in. It has been built in, as I said, since 1998 or so.

Again, as Murray said, one of the things that industry looks at is the various degrees of risk associated with investing in one area and one of them is - what is the fiscal certainty there? What is the geological risk? What is the geological certainty there?

When you mention Norway, Norway has a profit-based royalty regime and has for some time, but we've also learned other lessons from Norway and that is predictability of where lands are going to be issued over time so that investors can get prepared for new opportunities and doing geoscience work in advance. Norway has done that and we've taken some of those ideas as well.

As Murray said, the royalty is set, it's well-known, and including how it's going to change, that's well-known as well. I don't think it's seen to be a deterrent as much as the geological uncertainty is at this point in time and that's why we're putting most of our effort in the geology right now.

MR. CHAIRMAN: Mr. Lohr.

MR. LOHR: I'll ask my curiosity question like Mr. Irving did. The Play Fairway Analysis shows - when you showed the picture, there are four lines going through it almost north-south and they read 1,100, 1,400, 1,600 and 2,000. What do they mean on that slide?

MR. MACMULLIN: Those are for - they call them long offset seismic lines that were acquired. The first three to the south - the first three as you go from left to right had been acquired by the oil and gas industry over the years. We acquired the one to the far right and what we do there is try to understand the early tectonic history of the offshore, so these are lines that investigate structures seismically that might be anywhere from 20 to 60-plus kilometres below the sea level. We did that in trying to understand what happened between Morocco and Nova Scotia in the early years and how it drifted. So that's just put there. I suppose we don't really need to have those lines on there but it shows some fundamental geoscience work and the extent to which we looked at the region and some of the seismic data that exists.

MR. LOHR: Okay, so it's sort of a cross-section view of what's down below is done on that line.

MR. MACMULLIN: Exactly, and that's just representative of some key lines we looked at. We probably looked at 75,000 line kilometres of seismic and about 30,000-some square kilometres of 3D seismic in doing the Play Fairway Analysis.

MR. LOHR: My question is really - I mean that was for curiosity, I was thinking what on earth does that mean? The call for bids expected to be issued in April, can you outline to what degree the Department of Energy is involved with the Canada-Nova Scotia Offshore Petroleum Board in deciding which parcels get bid out?

MR. COOLICAN: I'm going to start and Sandy can correct me and he'll get into a little more detail. The first thing is that when we introduced the Play Fairway Analysis we met with staff at the board to encourage them to set a longer term timeline to indicate where future bids were going to be coming from. As you can see on this map - the 2015 area, the 2016 area and the 2017 area - for a number of years we've been going out a few years so

that industry has an understanding of where we're going to go. We've planned our own geoscience work to fit with that, so the board agreed to that approach.

When the board is approaching a call for bids, Sandy and his team will talk to the geoscientists at the board to make sure they're aware of our geoscience work and where the prospective areas are. But it's the responsibility of the board to design what the boundaries of the packages are going to be and where exactly they're going to be located. I would be very surprised if the entire 2015 area would be part of the call for bids.

Then once the board has made their decision, they will consult with us on here's what we're thinking of putting out and here's what we think the boundaries should be. There's an informal part of that and there's a formal part of that.

MR. MACMULLIN: The only thing I'd add is that with the 2015, 2016 and 2017 polygons, as they're drafted there, what that is are regions within which the Offshore Petroleum Board will post lands that they post themselves. That won't keep industry from coming in and saying gee, I'm interested in a piece of the 2016 lands for the next call, for the 2015 call, but this is establishing predictability for offshore board-identified lands. So yes, we do have technical discussions with the Offshore Petroleum Board staff on areas where they're focusing in terms of doing some of their mapping work. We review that and take our own decisions as to where it is that we want to focus.

MR. LOHR: So the Department of Energy does not select the parcel locations.

MR. MACMULLIN: On occasion we have in posted lands, yes, we have.

MR. LOHR: The Department of Energy itself?

MR. MACMULLIN: Yes, we have posted. Anybody can nominate lands.

MR. LOHR: When we were looking at the package that went out, it looked to me that a lot of - north of the gully there was a fair number of discoveries - and you looked at the well, why isn't that parcel north of the gully there included or has that already been done? Do you know what I mean - north of the marine protected area, just northwest, northeast of Sable there's a fair bit of wells that have been drilled that show a lot of promise. How come that area isn't in the parcel plan? Would I be correct about that? There has been a fair bit of discovery northeast of the gully.

MR. MACMULLIN: I wouldn't say northeast of the gully, not much has been discovered, but certainly north of the gully and west of the gully. There's a discovery called Penobscot, it's an oil discovery that was made in the late 1970s, I think, or early 1980s. That land is scheduled to come out in 2016, somewhere in there, which could include that land. I also would like to point out that the deadline for industry-nominated lands, or non-board-nominated lands was in early December. The public will find out in late April, when we expect the Offshore Petroleum Board to issue its call for bids, whether or not any lands

had been nominated and posted in the 2016 area or in any other area. It's possible that you might see something in the area that you've identified in the upcoming call, it's possible.

MR. CHAIRMAN: Mr. Hines.

MR. LLOYD HINES: I want to thank the presenters for coming to be with us today. It was an excellent presentation on what is a complex matter and probably not well known across the province. In particular, I also want to compliment the committee on the quality of the questions that have been put forward today. I really, simply, want to go on the record as complimenting the Department of Energy, in particular, for the work that you have done in the Play Fairway Analysis. I think your explanation of the title was appropriate too, because geologists often dig in the dirt and so do golfers, in terms of divots, sand and all of those kinds of things, so there's quite an umbilical relationship there.

The Department of Energy certainly proved its worth in my estimation, knowing that it's a relatively new department - it was carved out of DNR a couple of decades ago, I think. It has proven to be a wise decision to have a group of dedicated people focused on energy issues and certainly not only the offshore oil and gas and how we're focusing on onshore and, of course, we have the electrical growth industry that you have also been managing. I think it has been a wise decision to have a Department of Energy.

I also want to emphasize the good relationship that exists between Nova Scotia Business Inc. and the Department of Energy as to coordinate and manage these complicated projects. These are long-lead projects and there needs to be consistency over time in order to bring them to fruition. We're always suffering from the misunderstanding of the public, who are always impatient, that we need these long lead times to help Nova Scotia reach that part of our economic potential.

Keep up the good work, I think we're headed down an exciting path. There's lots of activity and potential here in the province and I'm really pleased to hear what you've been up to today. Thank you.

MR. CHAIRMAN: Mr. Belliveau.

MR. BELLIVEAU: There was mention here of Norway and to me, Canada and Norway share a lot regarding their interests in energy and especially the fishing industry, there's a comparison there, but my interest is in the comparison. How do we compare to places like Norway? Even on the West Coast of Canada, B.C., our regulation, to me there's an interest here of a question regarding royalties. My understanding of Norway is that part of the royalty base is making sure they have a mechanism in place in case there's a spill, or whatever, to protect the fishing industry. My general question is, how are we compared to places like the West Coast of Canada and Norway? Are we going to have a made-in-Nova Scotia regulation? How is that going to be compared to the other countries?

MR. COOLICAN: I'll start and depending on how poorly I do in answering, I'll see whether Sandy needs to jump in.

In answer to your question I would say that we're definitely taking a made-in-Nova Scotia approach, but the made-in-Nova Scotia approach is based on significant research in other jurisdictions so that we can learn as much as we can about how things are being done in other places. That takes a fair amount of work. It takes a fair amount of being open to what's happening in other places. Sandy and his team maintain fairly regular contact with other jurisdictions that are involved in offshore exploration. In fact, Sandy was one of the leaders in getting this group to get together on a regular basis.

I know that members of the Canada-Nova Scotia Offshore Petroleum Board have also looked at other jurisdictions to see what works and what doesn't work. We have also watched what has happened in Newfoundland and Labrador, and that's probably more important in terms of experience because when it comes to offshore there's really not much happening on the West Coast in British Columbia. We stay in touch with the federal government, which has interests in the Arctic and we stay in touch with the Government of Newfoundland and Labrador; I know the two boards communicate a fair amount.

I think it has been an advantage that the first major projects in Nova Scotia and Newfoundland and Labrador had an operator who was the same. I think that has helped to make sure that our regulations - as someone put it to me once, we have the same requirement for lifejackets or life preservation suits that Newfoundland and Labrador does partly because there was a single operator. That has encouraged us to compare notes.

I think that the openness to learning from other jurisdictions applies to safety. It applies to environmental considerations. It involves royalties, it involves benefits. Through the whole gamut, we try to stay open to experience that comes from other jurisdictions and look at it and ask, would that work here or would it not work here?

Just as an example, there are things that we do because of the weather here and the sea state that may not be as important in the Gulf as it is here, but we certainly make sure that when a rig comes to Nova Scotia and it has been working in the Gulf, that it meets our regulations. Often there are significant modifications that need to be made to meet our regulations, partly again because of the weather and sea states that people will attract here. Sandy do you want to add?

MR. MACMULLIN: Just a couple of things. For years our regulator has been a member of the International Regulators Forum and they meet annually to discuss where regulations are effective or they need to be improved or modified. So certainly on the environmental and the safety side, there is an ongoing process that has been going on for some time now, and that includes such jurisdictions as Australia, the Gulf of Mexico and places that see a lot of major weather events go through.

As Murray mentioned, we've had quite a number of meetings over the years on what I would call economic regulation or economic policy when it comes to the oil and gas industry. So you sit down with Norway, the U.K., the U.S., Ireland, some African countries, New Zealand, Australia, and you talk about what's working and what isn't working from an economic regulation perspective. It has to do with waste management - how do you avoid waste, how do you maximize recovery? How are new technologies applicable? What kinds of equipment are now being used and being contemplated for enhanced recovery techniques down the road?

So I think it's fair to say that governments and the regulators are fairly well integrated in terms of regularizing exchange of policy - what's working and what isn't. We have unlimited liabilities in our offshore for our operators. Our operators essentially have to be super majors or national oil companies. You're going to be in the deepwater so you have to have deep pockets. If you haven't got experience drilling in 800 metres of water over the last 10 years, you won't be able to bid on lands in the deepwater, it's as simple as that.

I don't think we have - there's nothing that's static in the industry. Technology is always evolving and you have to keep on top of it. We've regularized our meetings and we have meetings such as this, we sit around a table and talk about what's working and what isn't - not presentations and not conferences, it's sitting down, people like ourselves, from other jurisdictions.

MR. CHAIRMAN: Mr. Horne.

MR. HORNE: A question that may not be quite relevant to what we're talking about today, your geoscience encyclopedia there has been very beneficial, I believe, for the offshore, extremely so for companies coming in and trying to get an understanding of how things work geologically in the offshore. Onshore is another issue that your department is involved in.

I understand you're developing something like this for the onshore and I'm just wondering how it's going to be promoted or how it's going to, I guess, benefit any onshore drilling. I hope that's not too far off course.

MR. COOLICAN: It's tangentially related; we're taking the same principle of looking at the geological information that is available and trying to organize it in a broader framework than just the specific results that a company might get and see what lessons we can learn for the broader area of our onshore in Nova Scotia. We would certainly plan the same approach that this information would be publicly available when it's completed and would be available to the industry to look at. We would begin to meet with companies that were interested in exploration onshore to explain the kind of information that we pull together.

One of the things and for someone like me without much geological knowledge, when you look at a map of Nova Scotia, the northeast has potential, the southwest is pretty well just rock - no offence, Mr. Belliveau.

MR. BELLIVEAU: I'll commit to that - that's a true statement. (Laughter)

MR. CHAIRMAN: Mr. Lohr.

MR. LOHR: I'm interested in the amount of travelling that has been done by the Department of Energy. I know the former Minister of Energy spent about $35,000 travelling in less than eight months. I'm just wondering how you determine what trade missions you do participate in.

MR. COOLICAN: The travel the department undertakes is much broader than trade missions. Sandy just talked about the efforts to stay in touch with other jurisdictions that are working in the offshore and it requires personal meetings and the meetings move around. When things like the geoscience are being marketed, the contacts that we have in the oil and gas industry when we meet with them, one example is that we do a peer review where we take the results of geoscience research that we've done and we go to a meeting with people in industry and say, here are our results, what do you think of them? Is there more information that we need in this area or that area? Those are face-to-face meetings and we try to have one in North America, which would be Houston, so it's easier for them to get to and we do another meeting somewhere in Europe. Those are face-to-face meetings.

When it comes to the shows we go to, we tend to do it based on what our experience is of the show, what the opportunities are to meet people who we think are presented. We try to do something, again, in North America and something in Europe because they tend to be kind of different centres of oil and gas activity and organization so we try to do both. After each show that we go to and after the meetings, we always have a discussion: how did that go, how many contacts were made, what sort of contacts did we make, is that a show that's worth going to or not? We do that quite carefully - partly because of the costs, but also the time.

I think one of the most valuable resources the government has in the Department of Energy are the people and their time. So for them to spend three or four days in Houston at an oil and gas show and not have their time to use productively, they would be the first to complain because while sometimes it's expensive to be in Houston, it's not often a lot of fun - no offence to Houston. It's not top of the list of places to visit.

MR. LOHR: I've never been to Houston so I can't comment on Houston, but I'm just wondering about OTC Asia. I believe you attended that last year. What was the value of attending OTC Asia?

MR. COOLICAN: The value of attending OTC Asia is that the Chinese and the Koreans in particular have expressed an interest in investment in our offshore. We have

both made specific trips to Asia to meet specifically with companies and governments, but we also felt it was important to go to that show to see if we were meeting with the right people or if there were other contacts that we would look at.

MR. LOHR: Would you produce a report after the show was finished that said what was accomplished at the show?

MR. COOLICAN: We tend to do that through a meeting rather than an official report.

MR. CHAIRMAN: Mr. Irving.

MR. IRVING: I just wondered if you could give me some accurate information because I've said some things that I've picked up somewhere, but I'd like some facts kind of reinforced here. Again, it's on the issues of the potential here, but also managing the expectations. I've heard that this play off of Nova Scotia is one of the biggest in North America. Correct me if I'm wrong on that. Then the idea of $2 billion, which sounds like a huge amount of money - I've also heard that might equate to four holes or something like that. Can you give us a sense of how important this is in the North American context of energy? Is $2 billion a big number in this industry and if it's only four holes, what's the chance of us hitting something?

MR. COOLICAN: I'll let Sandy do the math on how many holes are going to be drilled. I look at the significance more in the Nova Scotia context. If I take my experience since I've been the Deputy Minister of Energy, the first bidding process was industry-nominated lands and the bids were zero, and we've had a couple of zeros recently, so for us to achieve $2 billion in bids was a very pleasant surprise and very significant.

The comparison is more to Newfoundland and Labrador, and the waters off there, who bid in a similar process to ours as also a frontier area. These are the biggest bids in offshore Canadian history. That's significant from a Nova Scotia context.

We are in competition around the world so the fact that two super majors have made significant commitments - and these would be viewed as significant commitments in a global context as well - is significant.

If you look at the amount of oil that we see offshore Nova Scotia of 8 billion barrels, that's a significant amount of oil. We think there is a big opportunity, Shell and BP seem to think it has global significance because if they didn't, they wouldn't be here, they would be somewhere else in the world. I'd say the same thing for Hess and Woodside, coming from Australia to come here, there are opportunities in that part of the world as well and they have chosen to come here, so I would go with their judgment.

Sandy, I don't know if you want to answer about the level of effort.

MR. MACMULLIN: I can give a couple of things. A $1 billion bid or a $2 billion bid, it's fair to say that's a reflection of both what industry thinks is the prospectivity of the area as well as what the competition is going to be. If you didn't think you had any competition, you probably wouldn't bid $1 billion. It's like a silent auction, you'd probably bid a whole lot less. So while a high bid does reflect what industry sees as the opportunity there, a low bid doesn't necessarily mean there's low opportunity, it just means that that's what they think they had to bid in order to pick up the property.

I think it's also important to look at the Gulf of Mexico offshore, Brazil offshore, West Africa and the North Sea as areas that have very established deepwater environments that have found oil and gas in the deepwater and have lots of - certainly a lot lower level of risk because it has been proven there. I think you see in offshore Newfoundland and Labrador and the Flemish Pass and in the deepwater where that would essentially be de-risked by Statoil in a discovery a few years back, ExxonMobil came in and swooped in and picked it up for $500-some-odd million for a parcel because it has been largely de-risked.

We have a way to go yet in terms of what potential could actually be realized. I mean we're talking about 8 billion barrels of potential and 120 trillion cubic feet of potential right now; $2 billion, we've seen some of the largest 3D seismic programs over the last couple of years in the world. Murray mentioned in excess of $300 million, it could even be a lot more than that. An offshore well, deepwater, depending on the depth, it's really a function largely of how much rig time that you're going to be there, how many days, and that's generally a reflection of how deep you're going - the deeper you go, almost exponentially how long you're going to be there, but just say $200 million anyway. So $2 billion is 10 wells if you didn't require any seismic.

I think it's very likely that you're going to see at least four wells drilled in the next four years or so, one beginning this year. I think some of the learnings from these early wells will determine how many more wells are going to be drilled and when and how quickly.

I think the world is watching, Shell's well, because if it comes in it has lots of implications all the way from north of offshore Florida, up to off Labrador in terms of what the geological implications are.

It's a very significant bid, it will result in wells being drilled, my best guess is at least four. We've already seen hundreds of millions of dollars of new seismic information but it still carries a fair degree of risk, which is why we're continuing to do more geoscience work.

MR. CHAIRMAN: Thank you very much. I was going to say we've exhausted our witness list. Mr. Dunn.

MR. DUNN: I have one last question, and again, I'm going to follow up on Mr. Horne's question on onshore development, if I may, just for a couple of seconds. Looking

at the geological information you have available now, how promising do you see the onshore development in the future for the province?

MR. COOLICAN: We would say that there is opportunity there. When we look at the opportunity offshore and the opportunity onshore, we've made a decision that the opportunity offshore is a more significant opportunity and holds greater promise for the province. There has been a certain amount of drilling done onshore in Nova Scotia since the 1860s and there have been no commercial discoveries. In the offshore we've had three large projects.

I think the presence of the natural gas pipeline has increased some of the interests of some of the players in what we're doing. Price is always an issue and the price of natural gas has gone up and down like the price of everything else. In an area where there has been less activity - there hasn't been a lot of activity in onshore Nova Scotia and there hasn't been any pipeline connection until recently - it hasn't been as well explored and also there has been the whole issue of decisions made by the government on hydraulic fracking and how we respond to that. Even before that issue became an issue there was not significant interest at the time, there just hasn't been significant ongoing interest in our onshore.

Our view has been for a number of years now that the opportunity is offshore and when you have limited resources that's where successive governments have chosen to put their money on the offshore.

MR. CHAIRMAN: Mr. Lohr.

MR. LOHR: I'm just interested in the downturn in production on Sable in natural gas. I understand there's more water coming up in those wells. I'm just wondering if you could comment on why that wasn't anticipated or what's happening there?

MR. COOLICAN: I'm going let Sandy take this one.

MR. MACMULLIN: There are two projects, of course, the Sable project and the Deep Panuke project. I know you know this, but just to set the stage, both are gas discoveries and both projects have associated with them gas pools which are underlined by water.

What tends to happen - and it almost always happens - is that you'll go down and perforate the gas zone and because the gas sits over the water, the gas will deplete its energy and the water will encroach and break through. Ultimately, the water production will be such that it will kill the well and it's pretty much done, unless you're able to establish where the water's coming from and squeeze off the areas of where the water is coming from.

Water has been produced from the Sable project for quite a few years now and that's something that's mathematically modelled and projected. You build models, you

produce, you get some history of production and you go back and you adjust your models to try to match what has happened and then project going forward. That is what has been happening for quite a few years in the Sable project, that's what happened with the Cohasset-Panuke project and that's what's happening with the Deep Panuke project.

I think with the Deep Panuke project - and we have some knowledge of what's happening there - it's not an atypical kind of field like you see with Cohasset-Panuke and with Sable, which are sandstones. These are reefs, and reefs have got vugular porosity and fractures that could easily transmit a lot of water from below. The possibility of producing water from the Deep Panuke project has been identified for quite some time and this field is being produced. It's getting some production history and the exercise, of course, has been and continues to be finding some remedial work that can take place to defeat the tendency to produce water, so that more gas is produced. That's ongoing now.

The Offshore Petroleum Board, the regulator, has a team that is doing modelling on that and projecting what the ultimate recovery could be for resource stewardship purposes as is Encana. It's not something that is unexpected. It's disappointing, it can happen, but not unexpected in the sense that nobody saw the possibility for it coming.

MR. LOHR: So what sorts of remedial actions could be taken then? What are the range of possibilities?

MR. MACMULLIN: One of the things that I can't speak with authority on is the new data and the ongoing conversations that our regulator has with Encana, for example, or with ExxonMobil on day-to-day operations and the resource stewardships, but an example of a possibility is anything from saying there's nothing we can do about it, or seeing where the water is breaking through, going in and squeezing off that particular area or shut that off or pack it off somehow to keep the water from coming up. And probably a lot of in-between kinds of things.

It's a production engineering problem and so those are the kinds of things that typically would be looked at. So the regulator would be looking at that as well as Encana or ExxonMobil in the case of the Sable project.

MR. CHAIRMAN: Thank you. We have time for closing remarks if you would like. Mr. Coolican or Mr. MacMullin?

MR. COOLICAN: I would like to thank the committee for their attention. I agree with Mr. Hines that the questions have been spot on. I've learned some things myself, listening to some of Sandy's answers and also listening to your questions. That is one of the things that I really like about energy as an issue. Whether it's on the oil and gas side or the electricity side, there isn't a day goes by that I'm not learning something.

The other thing is, I hope that you've got a sense of the kind of expertise and forward-looking strategic thinking that people like Sandy MacMullin bring to the

Government of Nova Scotia. We have some people in the department who are devoting a lot of their energy, their experience, their expertise in an area where - I don't want to be too blunt about this, but these people could be in Calgary making a lot more money than they're making now. In some cases, they could even be in Halifax making more money than they're making now. They make an incredible contribution.

I'm sorry you didn't get a chance to meet Chris Spencer today because he is another public servant who has made an immeasurable contribution to the province with his negotiating skills and his understanding of royalties and how to ensure that Nova Scotia is getting its true benefits from both the industry and from the federal government. From my perspective, it's a privilege to work with him every day. That's why I'm still doing it. It's a fascinating area that bears a huge amount of promise for the Province of Nova Scotia and its economic development. Thank you.

MR. CHAIRMAN: Thank you very much. I would like to close by thanking not only the panel members, which again, always bring good, solid questions to the speakers, but also for the professionalism. It's comforting for us to know that within the Resources Committee that we have - I think anybody could look at it and understand that the health of any province's economy is directly tied to the success of its resource. I wouldn't like to use the word exploitation, but in using our resources productively and certainly in the energy sector, the challenges we have, it's comforting to know that we have quality people behind us.

I would also like to echo Mr. Hines' comments too. As a matter of fact, I will even suggest to his wife that maybe we could get a copy of the Play Fairway book for him for Christmas. (Laughter) He would enjoy that.

Also, I can go back a little bit - I can remember when Gordon Balser was appointed as the first minister - a good friend from years back - I can remember the glazed over look in his eyes a few times. I do commend government for the commitment they've made to the Department of Energy, not only in the past but ongoing - from all Parties, I believe.

So thank you very much. We'll take a short adjournment and be back in just about two or three minutes for further business. Thank you.

[10:45 a.m. The committee recessed.]

[10:53 a.m. The committee reconvened.]

MR. CHAIRMAN: I'd like to call the meeting back to order. I believe committee business is the next thing on our agenda.

I guess the next thing up for discussion is we had at one point tried to see if we could meet during the House sitting and I think since we discussed that there was a change in the House Rules that did open up Mondays, I believe there was some talk around that

being an opportunity for committees. I did try to get some clarification on that. I think their understanding is that they are trying to look at Public Accounts and Human Resources as the two maybe they are going to target, plus the Committee on Law Amendments for that.

I personally don't have any real appetite for Monday meetings during the House sitting. I don't know if there are any people who would like to offer any opinions on that or if it's a moot topic. Mr. Dunn.

MR. DUNN: I don't have an appetite for any meetings during the House sitting, Mr. Chairman, but that's another discussion for another time.

MR. CHAIRMAN: Okay, thank you. On saying that then, if you don't mind, we'll go on to setting up the probabilities of when our next meeting schedule would be. Typically the next probable date would be May 21st. Now in order for the clerk to do scheduling around that and get our speaker organized, we're looking at possibly having to know by May 14th in advance, to give the speaker a chance. Could I suggest that just in case the House is still actively pursuing what it does in the House that we have two options: one would be May 21st, and the other would be May 28th? If we could leave that at the discretion of the clerk and the chairman, pending notification of the speaker, to give everybody at least a week's notice. If it would be okay I wouldn't mind asking that those two dates be acceptable and we'll certainly let everybody know.

I believe our next presenter is Community Forest Pilot Project initiative, so that's tentative.

With that, I thank everybody and we now stand adjourned.

[The committee adjourned at 10:56 a.m.]