STANDING COMMITTEE ON THE ECONOMY

Hansard Verbatim Report

No. 6 – June 23, 2016

Legislative Assembly of Saskatchewan

Twenty-Eighth Legislature

STANDING COMMITTEE ON THE ECONOMY

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Published under the authority of The Hon. Corey Tochor, Speaker

[The committee met at 13:28.]

The Chair: — Good afternoon, Economy Committee members. We continue our consideration of estimates as we go through this budget cycle. Today we have substituting for Mr. Belanger, Mr. McCall is here; and for Mr. Doke, Mr. Steinley is substituting member today. And as I mentioned, the committee will be considering estimates for Innovation Saskatchewan and the Saskatchewan Research Council.

General Revenue Fund
Innovation Saskatchewan
Vote 84

Subvote (IS01)

The Chair: — We will begin our deliberations of vote 84, Innovation Saskatchewan, subvote (IS01). Mr. Harrison, this is your first time before the committee. If you wouldn't mind introducing your officials and, if you wish, any opening statements you'd like to make you can do that now.

Hon. Mr. Harrison: — Thank you. Thank you very much, Mr. Chair. I appreciate that. Thank you to committee members for being here today on what I'm told is a beautiful Thursday afternoon outside. I want to introduce officials here with me. Mr. Jerome Konecsni, our chief executive officer at Innovation Saskatchewan for a few more days. I'll probably address that in my closing comments and thank Jerome for his service. I want to . . . and Andy Melnyk on Jerome's left, senior strategist at Innovation Saskatchewan; and Kim Krywulak on my right, the manager of financial reporting at the Ministry of the Economy.

I just have some brief opening remarks talking about Innovation Saskatchewan. And I think members know IS [Innovation Saskatchewan] is the provincial government agency responsible for facilitating and coordinating the Government of Saskatchewan's strategic direction in the areas of research, development, science, and technology. It also supports the demonstration and commercialization of science and technology for the long-term sustainable growth of Saskatchewan's economy.

IS has provided $2 million in support for the Petroleum Technology Research Centre, or PTRC, this year. PTRC provides project management and funding support for research into enhanced oil recovery and CO_2 storage. IS has provided $1.2 million in funding support for the International Minerals Innovation Institute. This organization provides project management and funding for research and education, improving the capability of Saskatchewan's mineral sector to address its needs. And we're obviously, in IMII [International Minerals Innovation Institute], in partnership with a number of private sector companies.

[13:30]

IS has contributed $5.63 million in funding to the Vaccine and Infectious Disease Organization-international vaccine centre which is better known as VIDO-InterVac, also $4.1 million to the Canadian Light Source synchrotron. IS has provided $4 million to the Innovation and Science Fund, which provides funding to Saskatchewan universities, colleges, and research institutes. IS's contributions will support research projects that have received funding approval from federal programs that require matching funding support, thus leveraging federal research funding.

We've also provided $3.6 million to the Sylvia Fedoruk Canadian Centre for Nuclear Innovation for the provincial government's nuclear research and development strategy. Related to this, the Saskatchewan Centre for Cyclotron Sciences has received the Canadian Nuclear Safety Commission's nuclear regulatory approval to operate, and as a result it has received permission to deliver the radioisotope FDG [flurodeoxyglucose (18F)] to Royal University Hospital. And we may have a bit more to say about that tomorrow.

IS has also contributed $5.63 million to the Saskatchewan Health Research Foundation or SHRF. IS has put a funding contract in place with SHRF to provide funding based on a strategic plan approved by the board of directors. The plan places greater emphasis on extracting social and economic benefits from health research for the province.

Mr. Chair, as well as all of the above, IS manages the Saskatchewan Advantage Innovation Fund, or SAIF as we call it. This fund was established to facilitate innovation in our province's core economic drivers, which are agriculture, oil and gas, and minerals, We did extensive work on targeting our investments with regard to our SAIF funding. To advance this goal, SAIF will receive $866,000 from IS this fiscal year, and of this amount 350,000 will go towards industry research into the development of innovative enhanced oil technologies, 250,000 will be assigned towards improving the innovative abilities of Saskatchewan organizations through the innovation skills capacity development program, and $286,000 will assist in the ability of Saskatchewan organizations to identify and enter into collaboration agreements with international organizations through the international engagement and investment attraction program.

IS will support the Saskatchewan Innovation Fund of the Centre for Drug Research and Development or CDRD. This fund was created to support and accelerate the commercialization of cutting-edge, early-state health technologies from the province's top research institutions. The intent is to help attract additional investment required for commercialization. The fund's partners are Innovation Saskatchewan, VIDO-InterVac, the College of Pharmacy and Nutrition at the U of S [University of Saskatchewan], Ag-West Bio, and CDRD itself.

The Saskatchewan portion of the fund is $1 million, and the CDRD has committed $1 million for a total of $2 million. And, Mr. Chair, IS's investments are paying off. For instance, a vaccine that will help Saskatchewan hog producers prevent millions of dollars in losses is going to field trials, and IS has also contributed to the creation of a materials research centre in the universities of Regina and Saskatchewan to study corrosion issues in our province's mining industry.

We've done a number of other projects in collaboration with private sector partners, which I really think is a hallmark of how we do innovation here in this province, which is very much

partnering with other organizations, leveraging resources to move forward in terms of economic development projects and also other research in areas that are going to benefit the people of the province.

So with that, I will just say once again thank you for the opportunity to be here today, for the opportunity to present, and we look forward to telling which I think is a very, very interesting story about some great work that's going on in the innovation field in this province.

The Chair: — Thank you very much for that information, Mr. Harrison. I would like to welcome . . . well there's a group of students that have joined us real briefly, nice to see. It's a rare pleasure to have that many students join us in committee, and you're certainly welcome to join us for the hour and a half we have scheduled here. You might not want to. I neglected to mention that we started at 1:29 p.m., and again one and a half hours of deliberation this afternoon.

I would like to ask the officials if you could just introduce yourself for the record the first time you are asked to speak, if you are. So with that I'll open it up for the committee to ask any questions of the witnesses. I recognize Mr. McCall.

Mr. McCall: — Thank you very much, Mr. Chairman, Mr. Minister, officials. Welcome to estimates and thank you for joining us here today. And this will presage a bit of what the minister will get into at the end, I'm sure, but as good a place as any to say thank you very much for the service, Dr. Konecsni. And I'm sure you've got many more adventures to come, but maybe we'll hear a bit about that on the go-forward when we get into the remarks.

But I guess this is as good a place as any for the minister to perhaps discuss the difference between Innovation Saskatchewan and the Saskatchewan Research Council, and the approaches of the two entities.

Hon. Mr. Harrison: — Right. Well I'm happy to do that. I appreciate the question, and I think it's an important one. I'll maybe turn, I'll maybe ask Jerome. I'll give kind of an overview, but I'll ask Jerome perhaps if you want to give him more detail. Laurier could also, when he's in here later for SRC [Saskatchewan Research Council], can also speak to that.

But in a general sense, SRC are the doers. They do the applied research. They do a ton of work in terms of the pipe flow technology centre. They are kind of hands-on projects they're doing.

Innovation, we work with a number of organizations and partners to make sure that our investments that we're putting into innovation are used appropriately. Dr. Konecsni, as an example, sits on a number of boards that we, boards of organizations that we partner with — the CLS, Canadian Light Source, as an example; VIDO-InterVac. As well we act as a funding partner in many ways through Innovation Saskatchewan. That's probably, that's an oversimplification of all of it, but I think it's a broad statement of policy that's probably correct. But I'll sure, maybe I'll ask you if you could speak to that.

Mr. Konecsni: — Yes, thank you. Jerome Konecsni, Innovation Saskatchewan. Minister Harrison is correct in terms of identifying it, and I think the simplest way we look at this is what is the function and what is the role. Saskatchewan Research Council is a combination of highly skilled people with expertise in very specific areas, as well as a significant investment in capital which largely includes facilities and labs that are designed to provide services, technical support, product development support. So they're actually doers.

We are the policy people. We're the people who look after the province's interests and the investments that the province makes in scientific facilities, institutes. And we also provide advice to our minister regarding the strategy, innovation strategy. How can we optimize, benefit the strategy? How can the province benefit from that?

So we do not have any technical facilities. We have no labs. We have no facilities. We have people primarily on our staff who are either experts in innovation — personally I've spent the last 25 years in managing research in the public and the private sector and funding research through other organizations — and the rest of my team also has hands-on experience in industry.

So it was one of the things that we look for: do our employees have industry experience so they're bringing that understanding of what industry's requirements and needs are? And then we've also brought on some policy experts, people who are trained in innovation-related policy.

Mr. McCall: — Thank you very much for that description for the record. I guess some high-level questions, and then we'll dig into some of the line items in terms of the expenditure under question here today. But do you have any calculation as regards the . . . for every dollar that Innovation Saskatchewan puts forward, what's the return on investment for that?

Hon. Mr. Harrison: — Yes, it would be . . . I guess it depends. There's a bit of variation, but I think it would be safe to say it's about 5 to 1 in a lot of instances. Maybe, Jerome, you want to . . .

Mr. Konecsni: — Overall it depends; that's a major criteria. We have a process. It's a software program where we build into criteria, and there's 11 criteria that fall under two main headings: alignment with provincial priorities, and impact. So all of our decisions are made based on that: how well do they fit with Saskatchewan government priorities, and how much impact do they have.

So you can't fund everything. You get requests all the time, so you have to make choices based on what's going to have the biggest impact on the province. So one of those things that we look at as impact is leverage, and that's leverage from industry, from the federal government, and from international collaborators. And depending on the different organization — like in our two major industrial institutes, PTRC and the International Minerals Institute — the leverage there is 3 to 1 on a project. So the provincial government puts one dollar in the project and industry brings in three.

And what that tells us is that if industry is willing to put its money on the table, then it's relevant to them and it's going to

utilized. Innovation is a high-risk business so probably 1 in 10 on average actually delivers the results you want, but more often than not you learn from it as to what not to do next time, or that didn't work so you go down another path. But clearly the fact that industry is there and is putting in that kind of leverage.

Some of our other leverage, for example our investment in Genome Prairie, it's strictly an early-stage research in genomics. They're producing 5 to 1 leverage, and they get that funding from the federal government, from international collaborators, and in industry. So the province's contribution represents about 20 per cent on average of the project.

Mr. McCall: — Thank you for that. I guess, is there, can you break down or characterize the dollars that come from the different sectors — federal, industry, international collaborators. How does that break down?

Mr. Konecsni: — Well I think if you looked at, like for example with the institute . . . And again it depends on the nature of the activity and the kind of institute we're funding. If you look at the industry, the two institutes, there's 3 to 1.

So for example, I have the numbers here; just let me find the page. We have a good example of the international minerals institution. The province, since it was created in 2012, has contributed $3.7 million to the operations of this institute. So 3.7 million from IMII from 2012 to 2015. It's been 5.1 leverage of provincial dollars. There has been seven educational and training programs, which is a high priority for the mining sector; four research and development projects. And this comes from 27 member organizations including Saskatchewan's six mining companies . . . [inaudible interjection] . . . mining companies, the largest ones. And so what you will see is, for example, from the federal government Mitacs has contributed funding. There was a mining centre that was announced, I believe it was a year ago in La Ronge, and WED [Western Economic Development Fund] provided some of the federal dollars there.

But that's sort of where the breakdown is. In our educational programs, it's about 50/50, from government, 50 from industry. In our research programs we have a higher standard, so it's 2 to 1 at a minimum. But what we've been finding is it's actually exceeding our minimal target, our threshold. So it's typically 3 to 1.

Mr. McCall: — Thank you for that. Certainly the work you've done with the National Research Council is well regarded, as it should be. And I guess the question I would have for you is the federal innovation policy as it continues to evolve, and I'm certain the minister will have something to say about this. I was wondering if you could give the committee some insight as to Saskatchewan's perspective on how that is evolving and any sort of forecast on where it may wind up, and of course hopefully to the benefit of Saskatchewan.

Hon. Mr. Harrison: — Yes, a good question. We actually just had a federal-provincial-territorial meeting on innovation and economic development. Last Monday, I believe, we were in Ottawa for that. I was not in the House that day. We had a very . . . It was actually really a productive FPT [federal-provincial-territorial], a good discussion. I think it would be fair to characterize, which you did, and I think that's a fair way to characterize their policy as an evolving one. They're looking at how they can, you know, maximize the investments that they're making into innovation. We have ideas that we think would be . . . you know, I think that they're considering as well in terms of federal investment into what our . . . through the major science initiative particularly, which is under their innovation umbrella with regard to investment into, you know, national projects like the CLS.

[13:45]

So you know, we've had continuing discussions with the federal government on that over the course of the last couple of years to ensure that we're able to access the maximum resources that we can with what we see as being, you know, very much national science, nationally worthy science projects, or . . . It's not the right way of putting it but, you know, national institutions. So we're going to continue with that. Jerome, maybe you . . . I know you've been in regular discussion with your counterparts as well.

Mr. Konecsni: — Just to follow up on the key theme there, it's an evolving innovation strategy. They clearly look for participation and they've got at least three different consultation processes that they're launching over the summer.

One of them is on the bigger question of science. What is the right balance to be spending in discovery science? How much should be spent on commercialization? How much on applied research? That's a magic question that I don't think anybody is smart enough to come up with an answer, an exact answer, on that. But the fact that they're involving people is a good start.

We have our own views on that, and you can see by the models we've presented. One of the things that the federal government has said, and it's the kind of metrics you see from The Conference Board of Canada, is we don't get the level of business investment in research that, compared to other countries in the world, that we should. So they're looking to see what they can do to improve that.

Well we've offered, in our model of those institutes that I talked to you about, we focused first of all on those industries that drive our economy for our investments. And what we're finding is the model of having industry, academia, and government sitting around the table developing projects, establishing priorities, has resulted in 2, 3 to 1, 5 to 1 investment from industry.

So we see that this model is going exactly where the federal government wants to move, and Canada has typically been criticized for not getting in that direction. So we're encouraged by these numbers, these leverage numbers, because for us they're a measure of relevance.

And quite often a lot of the benefits of our research isn't felt until years after. But if we're getting the leverage, then we know that, just even in terms of the high-skill jobs that are usually spent, we're getting a pretty good return from that alone in the first stage of our investments. And then the benefits of the research come at a later time. And there's a variety of different benefits that we're actually working to better define. So I think

there's a lot of commonality. There's a lot of common interests.

We looked at the federal six areas of action plan today. We had a meeting of our innovation community just before I came down to Saskatoon, and we discovered that five of those areas we were perfectly aligned with — culture, scientific excellence, dealing with red tape, and trying to improve the ability for industry to access research. Training and skilled talent, skilled workforce and talent, access to talent was another one of those priorities.

And a lot of our efforts and our initiatives are working exactly in those, so we believe there's many opportunities for us to access federal support for a lot of the programming that we have developed and will continue to evolve.

Hon. Mr. Harrison: — And I would just add as well . . . Jerome said it very well, but we really do put a premium on having the involvement of a number of partners, I mean, academic, our research institutions, and industry. That's how you know that you're really moving in the right direction, because a Cameco or a Potash Corporation wouldn't be putting their resources into IMII, for example, and investing in particular projects unless they believed there to be a return on that investment. And that really, you know, lets us know we're on the right path and we're going in the right direction in terms of our limited resources with regard to innovation investment.

And it really has returned very real dividends for industry, for us, and ultimately for taxpayers in this province who have additional access to employment or, you know, additional resources that the government are able to put towards things like health and education. So you know, investment in innovation is something that we believe in and we're going to continue to do.

Mr. McCall: — What's your sense of where the feds are going to wind up?

Hon. Mr. Harrison: — Yes, well that's a good question. You know, I think they're still working their way through where they're going to . . . I think they have ideas and I, like Jerome said, I mean I think they have a general sense that we need to do better in certain areas, and they're working towards how do we get there. And they have a number of processes that are under way.

You know, we did have a good meeting of ministers responsible for innovation last week. And I think Minister Bains, who is my counterpart on a number of tables, FPT-wise, and who's a friend, who I served with in Parliament — we were rookie MPs [Member of Parliament] together, it seems like a long time ago now — but he's doing a good job and I think generally regarded as somebody who's going to do well as a minister responsible for the old Industry department. They call it Innovation, Science, and something or other. But you know, I'm hopeful that they're going to . . . that they've identified what the issue is. And we, at that meeting, kind of put our approach on the table and, you know, our view that it's working pretty well in terms of the partnership and including, you know, all stakeholders around this and having that validation from the private sector as being an important component of it.

Mr. McCall: — And again not to go on and on about, you know, the feds this, the feds that, but . . . And certainly as well recognized, there are a number of different funding bodies under the federal purview and obviously translate back into the ability to lever as per the mandate of Innovation Saskatchewan. What is the timeline in terms of them coming to something more definite in the evolution and the three tables that have been identified in terms of the go forward?

Mr. Konecsni: — The language that Minister Bains is using is one of action. He said that we're not doing consultations; there's been a lot of consultations over the years. So these are very purposeful consultations, and their goal is to have most of them done in the next six months. We'll see, I guess. But they believe that it'll have the largest impact on the next year's fiscal budget. Like, they would like to have some of their work done and have a clearer sense of direction and purpose. There are some things that they've been pretty clear on, you know, in terms of clean technology seems to be an area of focus.

The other thing that they're talking about is establishing what they call clusters or areas where Canada has an advantage or an opportunity to be a world leader, and I think Saskatchewan is well positioned. And I think Innovation Saskatchewan, our colleagues from other ministries are going to do our very best to convince them that agriculture, food security is one of those areas that Canada should be considered as a world leader. And certainly with the capacity we have here in Saskatchewan, particularly in Saskatoon, I'd be very disappointed if that wasn't recognized as one of Canada's leading centres of excellence or clusters, as they're using that term.

Mr. McCall: — I think they were even using the term super clusters, if I'm recalling my reading correctly. But you know, why be a cluster when you can be a super cluster?

Mr. Konecsni: — I think they're looking beyond just geographical. I think they're looking at a cluster that Canada has enough depth in, you know, to be able to be competitive globally. And I think we do in that space.

Mr. McCall: — And you rightly touch on the ag and food security cluster, super cluster. Cleantech, what sort of positioning does Saskatchewan have in terms of taking advantage of that as an emerging federal priority and lining it up?

Hon. Mr. Harrison: — I think SRC will have significant amount to say on that as being a particular priority. And they've been doing some very interesting work on that. I don't want to steal Dr. Schramm's thunder on it, but we can go into that in more detail when SRC are in here. But they're doing some very interesting applied work on cleantech.

Mr. McCall: — All right. And short of trying to get you to scoop your announcement for tomorrow, we'll leave it at that.

I guess moving on to the industry partners, and both nationally, international collaborators. Is there any sort of, anything you'd care to tell the committee on that front in terms of work of the . . .

Mr. Konecsni: — I think one of the things that he mentioned,

and it's a particular, you know, topic for me that I have a lot of energy behind, but it's international collaborations. Often there are targets for criticism because, you know, of expenses, but the reality is, and I want to use one example to show you if you do it right, if you make a strategic connection, if you do your homework, you can get a significant return.

One of the world's major projects in agriculture was sequencing the wheat genome. And it seems like a trivial thing given our sequencing technology, but the wheat genome is five times bigger than the human genome. It has seven different parent families. So it's pretty complex. And the Americans were leading a consortium. They'd been working on this for nearly 10 years and they did not finish it.

We made a connection. Our wheat breeder in the University of Saskatchewan, we linked him with an Israeli company who had a neat software program, an algorithm that enabled them to finish a project that the Americans were spending 15 million euros on and it's been 10 years. They did this for a few hundred thousand dollars in a few months. So when you can find those kinds of strategic partners . . . You can't do it all yourself. We have a million people. We're not going to develop every technology and everything we need to serve our needs.

So finding the technology and importing it is an important part of our strategy. And so this is one very specific example. We've got the world's attention, and the Australians are throwing millions of dollars in and they want to be part of this project, as do the people from the UK [United Kingdom]. So there's an example of when you take the right approach to leverage your capabilities and you find complementarity.

But you need to have people who have enough depth in the science to understand what they need and what they don't need. So anyhow, that's a point that I think often is overlooked in our discussions.

Mr. McCall: — Thank you for that. And again, I guess if you could just sort of give some insight into the relationship with the University of Saskatchewan, the University of Regina, Sask Polytechnic, the different academic partners in the endeavour of Innovation Saskatchewan. And certainly I've got some physical ideas about how that all fits together, but if you could talk about the role that the academic sector plays in the work of Innovation Saskatchewan.

Hon. Mr. Harrison: — Maybe I'll just briefly comment. That's the right way of looking at it too, I'd say, Mr. McCall. I mean, it really is an innovation ecosystem that exists. It's not, you know, kind of one agency in isolation from another.

And I mean, the way this works is by having that cross-pollination of ideas, the partnerships that exist, and very deep relationships that have existed for many, many years amongst the leaders and those that are involved in the innovation space here in the province who are able, because of those relationships, to be able to collaborate. Everybody kind of knows what everybody's working on, and how can we, you know, leverage efforts that we're making in similar directions?

That's one thing I've really taken away from, you know, my two-plus years as Minister of Innovation, is the remarkable ecosystem that we have here. And targeted, we are targeted about how we do these things. But we have scenarios where we really are world leaders and, you know, it's a collaborative effort.

But in terms of the . . . Maybe, Jerome, you can speak to the specific relationships with particular, whether it be U of R [University of Regina] or U of S or Sask Poly. But we, I mean we really do kind of work in a collective sense, and the more we work in that sort of collectivity, the better we do on these things.

Mr. Konecsni: — Yes. Well we've worked very hard at aligning and working in collaboration with the university. And we've been fortunate in the leadership that they have in their research portfolios with Dr. Karen Chad and David Malloy from the University of Regina. They're very receptive. I was even invited at the last strategic planning session of the university's executive team to talk about provincial priorities. And they're asking, how can we better serve the province? What are the kinds of things that the provinces look for? What do they value?

[14:00]

So that gives you an example of how I think we've come along in terms of the universities really understanding that it's in their best interests to serve the people of Saskatchewan, and they're actually taking action to demonstrate that. When you look at the institutes, a number of the institutes fund both universities. So the Sylvia Fedoruk Centre has a position that they fund here at the University of Regina. There's projects at the University of Saskatchewan. The mining institute, again with the materials centre that was created, it's a University of Saskatchewan and Regina collaboration.

And this whole area of innovation skills and capacity building is something that I want to talk about because this is a big part of our relationship with the post-secondary institutions. The great idea or the great technology or the great discovery is only a fraction of what it takes to be successful. It's the implementation and the execution where most innovation fails.

So we've been working with a professor from the University of Saskatchewan, Brooke Dobni, who has expertise in innovation systems and culture and processes. And we're going to be launching an online training program that's going to make this accessible to industry, to public sector organizations. The Ministry of Highways has taken some training in this regard, and also the Sask Polytech itself has actually taken the training, and they're going to be developing programming related on this in their credit and non-credit programs. So it's a real close integration. And they're going to work together, so the University of Saskatchewan's expertise is going to be complementary, and Sask Polytech is a great delivery agent.

There's tons of innovation that could occur with people like machine shop journeymen. And often the people . . . We always think that the innovation is going to occur with some scientist in a university lab, but there's a lot of our companies are actually led by people — like a mechanic, like a farm machinery mechanic, like a machinist — who are very hands-on, see a problem, and fix it. And that's primarily one of the biggest

drivers of innovation. If somebody needs a problem, there's a lot of creative people. The big problem is connecting the people with the problem with the guys who are the problem solvers. And that's kind of what we're trying to do, and our post-secondary institutions our extremely receptive to that.

Mr. McCall: — Absolutely. I guess at this point I'd ask the question around . . . Certainly it's been mused about with regards to the universities in terms of the transformational change agenda being identified of late by the provincial government. How does Innovation Saskatchewan fit in with the transformational change agenda? And certainly, the Minister of Finance had mused aloud about, say for example, the engineering departments of the University of Regina and the University of Saskatchewan, again two departments that are very well subscribed and have different focuses or foci that lend themselves certainly to the support of the work of the Petroleum Technology Research Centre for example, or the IMII or, you know, the CLS.

There's already a fair amount of differentiation in terms of where folks are going and the kind of work that they're supporting, and then how they fit into the ecosystem that the minister has identified. So I guess, I'm somewhat at a . . . I'm interested to know what application the transformational change agenda will have for something like Innovation Saskatchewan, and then the partners that have been rightly identified as critical to the work of Innovation Saskatchewan.

Hon. Mr. Harrison: — Thanks for the question. And I'm trying to think of how to kind of answer this. I mean, in some ways, Innovation Saskatchewan is affecting transformational change through the investments we're making and the partnerships that we have. It kind of . . . We are the innovation, or the transformation to some degree.

You know, through the investments we're making . . . As an example, we're increasing funding this year to the PTRC, and it's for a particular project, a $500,000 project to do additional research into tight oil formations. So you know, how it works right now with original oil in place, it's about 85 to 87 per cent that is unrecoverable. So in the Bakken for instance, we're only getting recovery rates . . . [inaudible interjection] . . . well 3 to 5 in the Bakken. We get higher in the heavy oil formations largely because of work that we've done in terms of research through PTRC in the past. So we're making investments there. I mean if we can increase recovery rates through additional research into tight oil recovery, that would have a huge significant, make a very significant difference for our producers — who are partnering with us on these projects, by the way — and a very significant difference for the economy.

I mean, if you're asking in terms of are we going to see kind of really significant changes internally to IS? No, you're not going to see that. We only have 11 FTEs [full-time equivalent] at IS. I think . . . Jerome I give the credit to, along with his team. I mean, we've built IS over the course of the last five or six years into an organization. I think we're focused where we know where we want to go. We know the sort of results that we want to see, and we're very much results focused. So you know, in terms of that sort of change internally, no you're not going to see that.

But you know, we're going to continue to focus on our priority areas where we know we have jurisdictional advantages, which are in Ag, in mining, and in oil and gas. We're going to target our investments there for our innovation dollars. And it really does make a difference. I think people might, you know, even watching might say well, innovation, what's this do?

You know, real world examples: 80 per cent of the crop varieties that we're growing in Saskatchewan right now didn't exist 20 years ago, didn't exist. And the way that these crop varieties have been developed is through things like mapping the genome of, you know, certain crops. I mean we've done . . . the flax we're working on right now is another example. What this results in though, it means that you have the need for less moisture, shorter growing seasons, higher yields, more resistant to disease, insects — these sorts of things.

So this is how innovation investment can return dividends that are far in excess of the original investment. So I mean in terms of kind of the transformational component, I would argue that, the Ag example being one where, you know, we really have . . . I know I talked to my grandfathers, both of them farmed for, you know, 50 years, but the agriculture is so unbelievably different now than it had been in 1955. You know, the size of operations, and I mean equipment, obviously all that's changed, but just the difference. I mean, what would have been crop failures for them are now some of the highest yielding crops guys have ever got, based on moisture and frost and, you know, different factors. I mean, the crops are just more resilient. And so there are some real outcomes from this, and I think we're, you know, our focus is to make sure that we keep seeing that.

Mr. Konecsni: — Can I add . . . [inaudible].

Hon. Mr. Harrison: — Go ahead, Jerome.

Mr. Konecsni: — I think we're on the verge of a transformational type of activity, and I've got a good example I can give you. Just recently, about a year ago the federal government announced Canada First Research Excellence, and there were only five projects across Canada that were awarded. The University of Saskatchewan was one of those five, and it was in the area of designing crops. It was granted to the University of Saskatchewan, but here's a perfect example. This is what's going to transform research and innovation in the future, is the disciplines working together.

In the past, biologists didn't talk to chemists, and chemists didn't talk to computer scientists, and microbiologists didn't talk to mathematicians. This whole project is an example of multidisciplinary or convergent innovation. And we have microbiologists with soils. We have the physicists from the Canadian Light Source, who are doing the imaging of plants live. We have the isotopes that are being produced at the Sylvia Fedoruk Centre that will be a part of that. And we have the plant scientists — who would have thought plant science would be involved in agricultural research? — but plant scientists are actually there working with those people now.

That whole project is based on the synergies. And what it's going to do, is it enables us to see things, what's happening in the roots and plants, that's going to transform: things like nitrogen efficiency, like water absorption. And we're going to

be able to make changes and make them faster. And when you look at evolving climates, speed is going to be the name of the game. All of these tools, when we put them together, and we get these great scientific minds in the room together . . .

And so we've been working with the universities of Saskatchewan and Regina, saying, we did it. We worked with our designing crops for Canada First; let's see what else we can do. Clean technology is one of those areas that, I think if we put the minds of those people together in a room, we could come up with pretty fascinating ideas. So that's how we'll transform.

Mr. McCall: — Thank you for that. And certainly I'm expecting that's the case that will be related to the transformational change subcommittee of cabinet. Because that is, you know, that's certainly how I understand the work of innovation, and the way it's supported throughout private sector, different levels of government, and certainly in the post-secondary education sector.

The way I understand it is . . . When I was a student on the campus, the University of Regina in the early '90s, being in geology 100 with Dr. Binda at the time . . . On from there, if folks were looking to go into graduate studies as related to geology, most of those folks shipped out to Calgary. And certainly the development and the work of the PTRC has not just been adding value in the economy and innovating and, you know, enhanced oil recovery as per the tight oil conversation earlier, but certainly that graduate level of research activity is there very much underpinned by the PTRC.

So it goes the same for some of my friends that I graduated high school with that were, you know, one and two in terms of best marks. They went off into physics at the University of Saskatchewan, did a lot of work at the linear accelerator, and again that's as it was. And that work has been built upon and we see those natural sort of clusters of activity there, sort of hard built into the sector.

So where I get worried is when I hear the minister saying, well we've got two faculties of engineering at the two universities and there's some kind of straight-line equation that can be made about merging or on, as opposed to the collaboration and innovation and differentiation that's already there in terms of the system.

So again we'll be counting on certainly your going on to other pursuits, doctor. So we'll leave it in the minister's good hands to make that case for a more thoughtful understanding of how innovation already is the transformation in a lot of different ways.

I guess the time drawing nigh, one last question for you. In terms of the leverage and the return on equity or return on investment that Innovation Saskatchewan is there to demonstrate, is there . . . It always sort of begs the question of, you know, are you at a steady state in terms of have you reached capacity in terms of where you're at for the dollars put forward or are there opportunities that are going unmet but for a want of another $5 million in the line item — or pick your figure? Are there opportunities that are going unrealized with the expenditure represented here today?

Hon. Mr. Harrison: — Thanks for the question. You know, what I would say is that, you know, we have a great team at IS and we have great partners that we work with that, you know, maximize the resources that exist. You know, just as kind of an example about, you know, IMII for instance, instrumental in establishing a mining engineering options program at the University of Saskatchewan. We just did the announcement Jerome referenced at the Northlands College. We have some of the most significant mining operations in the country and, you know, we're looking at ways that we can leverage the existing operations to increase opportunities for people, you know, even to learn here in Saskatchewan.

[14:15]

So you know, in terms of kind of the resource question which you asked, which is a fair question, I think that we're a new organization at IS. We've grown over the course of the last six years. I would suspect that you're going to continue to see evolution at IS.

You know, as an example, last year we transferred from different ministries that had administered programs, VIDO-InterVac, CLS, Health Research Foundation. Those were transferred to be administered by us because of the expertise that we are developing — well that Jerome and his team have — in terms of managing these sorts of arrangements.

So I think you're going to continue to see an evolution in the organization. You know, how that will manifest itself in terms of finances is a question I guess for the cabinet ultimately to answer. But I think that we're doing very well with the resources that we have now, and I think that we're going to continue to look for opportunities to leverage resources from the private sector, from the federal government, from whoever we can partner with. And we've been frankly even innovative about that, and that was part of our message to the Government of Canada as well.

The Chair: — Well thank you very much for that, minister and officials, for your answers. We've come to the end of our agreed-upon time for Innovation Saskatchewan, if you have a few last remarks you'd like to make. And then we will move on to SRC.

Hon. Mr. Harrison: — Sure. Thank you, Mr. Chair. Thank you very much. I want to thank committee members for being here. Thank you, Mr. McCall, for the questions. I want to thank officials, and I particularly want to thank Dr. Konecsni for his service over the course of the last number of years, in building Innovation Saskatchewan literally from the ground up, leaving IS in a very, very good place.

You know, we look forward to continuing. I'm asking Jerome to continue along for some time, continue to help us out, on not a full-time basis, but continue to help us with his vast experience and insightful advice that I so appreciate. So I just want to thank you, Jerome, on behalf of the province. I know we've done that privately already but I want to do it publicly. Thank you so much for your service.

The Chair: — Thank you very much. I echo those sentiments. And we will . . . It is 2:19. We will recess for as little a time as

possible, and we will continue after the recess.

[The committee recessed for a period of time.]

General Revenue Fund
Saskatchewan Research Council
Vote 35

Subvote (SR01)

The Chair: — Welcome back, committee members. It was about a five-minute recess. It's 2:24. We're considering investments for Saskatchewan Research Council, vote 35 of estimates, subvote (SR01).

We have new officials with us. Mr. Harrison, you could now introduce them and if you have some opening comments, go ahead.

Hon. Mr. Harrison: — Sure. Well thank you very much, Mr. Chair. And again it's a pleasure to be before the committee for estimates with regard to the Saskatchewan Research Council. I have to my left Dr. Laurier Schramm, president and CEO [chief executive officer] of SRC, and Mr. Ryan Hill to Laurier's left, the vice-president of finance.

So just by way of a bit of background, I think, you know, most folks are pretty familiar with the work that SRC does, which speaks to the very long history and exemplary track record that SRC has compiled over the years. But SRC is committed to benefiting the people of Saskatchewan. SRC adds value to the local economy through the responsible application of science and technology for the mining, energy, environmental, and ag-biotech sectors in the province. Sixty-nine-plus years into its continuing mission, SRC is positioned as Saskatchewan's premier provider of applied research, development, and technology demonstration.

SRC's 2014-15 economic impact assessment shows impacts of more than $519 million in direct economic benefits to the province plus more than 832 jobs created or maintained in Saskatchewan. This means that for every dollar invested in SRC by the provincial government, a 26 times return is achieved. In addition, in 2014-15 more than $27 million of SRC's project work was aimed at creating positive environmental and/or societal impacts. SRC's work contributed to energy savings of more than 40 million kilowatt hours per year and to the reduction or prevention of more than 21 000 tonnes of greenhouse gas emissions. These are significant achievements and identify how SRC's positive impacts expand beyond economics and jobs.

SRC's geoanalytical laboratories now operate three of the world's largest and best geo-assay laboratories for uranium, potash, and diamonds. These accredited facilities have become the external labs of choice for the largest mining and mineral companies in the world. SRC's pipe flow technology centre recently completed an expansion on an explosion-proof building that will accommodate research on light and heavy crude oil and refined petroleum products, all of which are flammable and require special equipment for safe storage and handling. And we plan on not testing the proof of the explosion in the building. With these new research capabilities, the centre can test a wider range of substances and help the Saskatchewan oil and gas industry transport crude oil more reliably and reduce operating costs.

Remediation work continues at abandoned uranium mines in northern Saskatchewan. This work is part of the cleanup of abandoned northern sites, a multi-year project that will remediate 37 sites. Since Saskatchewan is a radon hot spot, SRC environmental analytical laboratories continue to provide cost-effective radon test kits for citizens. They can detect the presence of radon gas in their homes and have the results analyzed at SRC.

In 2014-15 SRC's new Aboriginal mentorship program paired a University of Saskatchewan environmental engineering student with the business unit manager of environment remediation at SRC. The student collected surface and groundwater samples, measured water levels, and performed site investigations at a number of abandoned uranium mine sites in northern Saskatchewan. In 2016-17 the program has paired together six new students with six SRC employees.

SRC recently partnered with the National Research Council to grow the local and national biotechnology and biomanufacturing industries. The partnership with NRC [National Research Council] will develop biomanufacturing processes and products for industries beyond agriculture and health to also include the energy, mining, and mineral sectors. Together SRC will leverage existing capabilities and infrastructure and co-manage a fermentation facility.

Through its biotechnology laboratories, SRC is working with microbes that help crops become very tolerant and resilient to stresses. This makes crops more robust, with increased yields in unfavourable environmental conditions. SRC continues to conduct work involving animal veterinary health, agricultural products, as well as food and beverages in terms of fermentation.

SRC's advanced microanalysis centre uses advanced technologies to analyze sizes, shapes, and abundances of different minerals. The variety of services and tools used at the centre provide some of the simplest, most accurate, and economical methods for minerals analysis. Coupled with SRC's Canadian Nuclear Safety Commission licence, the expertise of our lead researchers and other laboratory services offered by SRC environmental analytical laboratories such as the Slowpoke II nuclear research reactor and SRC geoanalytical laboratories, SRC can provide a full suite of testing in one location.

SRC has a unique-to-Saskatchewan mineral processing pilot plant. The plant provides the capability to support in-demand initiatives in rare earths and other minerals such as potash, uranium, gold, base metals, oil shale, and coal. The facility ensures industry in Saskatchewan, Canada, and internationally has the leading-edge support capabilities it needs to develop mineral deposits in the most effective way.

SRC has been working with the Canadian oil sands industry for several decades to provide technological solutions that enable the extraction and transportation of bitumen in economic and environmentally responsible ways. SRC has been working with

companies interested in developing Saskatchewan's oil sands and oil shale to help them assess, develop, and deploy technologies that could enable economic and environmentally responsible development.

For more than three decades, SRC has been active in research, technology development, feasibility assessment, and technology application in the bioprocessing sector. Driven by the desire to reduce climate change emissions and a greater need for energy security, technology development has experienced accelerated growth around the globe.

Innovative biomass thermal conversion solutions are a cornerstone to this growth. SRC's three-dimensional, high-pressure scaled physical model is used to mimic an operating heavy oil field to develop solvent-based heavy oil recovery technology. It provides performance predictions to determine the best operating strategies for a given oil sands deposit. This model is the first of its kind in Canada and is expected to speed up the full- scale development of cost-effective and environmentally sound processes for Saskatchewan's heavy oil reservoirs.

[14:30]

So that's just an overview of the work that SRC does. As I said, I think the work is well recognized by citizens of the province and frankly right around the world as some of the utmost leading-edge and most technologically advanced work that's being done anywhere. So I look forward to taking questions from committee members, and thanks for the opportunity to present.

The Chair: — Thank you, Mr. Minister. That's what we'll do. Open up the floor to questions. I recognize Mr. McCall.

Mr. McCall: — Thank you very much, Mr. Chairman. Dr. Schramm, Mr. Hill, Minister, welcome to estimates. And you may or may not be interested to know that we wanted to make sure that we had time for the SRC all by itself so that it wasn't given short shrift in the rush to get to other activities within the Ministry of the Economy because of course SRC does a lot of interesting work, and we want to have a good conversation about that here today under estimates. And that request was certainly obliged by the minister generously, and here we are.

Twenty-six to one in terms of the leverage effect of SRC expenditure — it's always struck me as, if that's the return on investment, why we don't give you half the budget? But if you could talk about that, Dr. Schramm or minister or officials. And again where, in terms of that overall leverage, what are the sort of broad sources from which the SRC levers those investments, critical investments, science innovation dollars?

Hon. Mr. Harrison: — Yes. I'll maybe just make a high-level comment and then turn it over to Dr. Schramm. You know, also with SRC as we had just been talking about with Innovation Saskatchewan, partnership, working with private sector partners to be able to, you know, whether do leading-edge research, whether it be how do we kind of move to commercialization or in the case of SRC, I mean your business units, how you're working with, you know, De Beers for instance, some of the leading companies in the world to do some of their most important work obviously has a significant economic benefit. Like I said in my opening remarks, I think about $519 million in 2014-15, so leveraging the provincial investment, you know, to a very significant degree.

But I'll turn it over to you, Dr. Schramm, for maybe some more thoughts.

Mr. Schramm: — Thank you, Minister. Laurier Schramm, Saskatchewan Research Council, Mr. Chair. Thank you for the question. I'm not sure we could wisely use half the provincial budget immediately, but I certainly appreciate the sentiment. Like everything in life, there is always more that could be done.

But with the resources we have, we've been able to steadily, in the years we've been tracking, produce the kinds of order-of-magnitude economic impacts for Saskatchewan that you reference. The sources of that are wide because we engage to some degree in all the strategic sectors that are important to this province. And there is some contribution to those numbers from every one of those sectors, so I can give you some illustrations of specifics if you would like.

On your specific question of the major contributors, the major contributors come from our contributions to helping advance our mining and mineral industry in Saskatchewan and our oil and gas industry in Saskatchewan. Those are both fairly broad buckets as well, but those are the major contributors as the largest sectors, together with agriculture, making up the resource-based economy. But I would also point out it ranges into other areas in the other sectors as well, although the actual numbers are smaller.

And within those two large buckets, the major contributors in mining are our two most actively commercial and productive sectors of the mineral economy, so potash and uranium are the top two. There are some contributions from gold and coal and clays and other resources. The diamond work the minister referenced, most of the work we're doing is in helping companies that would like to operate commercial diamond mines in Saskatchewan and are trying to figure out what'll make market sense down the road. So those impacts are not realized in Saskatchewan just yet, but our role there with companies like De Beers that the minister mentioned is to make sure we're attracting their interest and their attention, and so that they are ready, when the resource is proved out, to be able to engage in Saskatchewan in bigger activities.

In the oil and gas sector, it mostly spans work in conventional light oil. In the previous discussion on Innovation Saskatchewan, the minister had referred to work done in support of developments in the Bakken Formation, so that's an area, as that industry advances, which is relatively new in Saskatchewan.

But we also have large contributions from heavy oil, conventional heavy developments, and occasionally . . . Well those would be the main ones. Sometimes we're able to contribute to natural gas production and transportation efficiencies as well.

Mr. McCall: — Thanks very much. I guess a burning question I have, and this goes into energy production . . . And I won't be

asking you if you're loaning your bomb-proof room out to the different caucuses for meetings or anything like that, but . . . or budget finalization. But as regards energy production, certainly SRC has played different roles over the years. And again with the . . . I guess if you could answer for me the following question. I was born and raised in the city, but both my parents come from farms and I guess any time in the fall where I'm out driving and see somebody burning their flax straw, I always wonder, how is it that we haven't got that fixed yet? So it's a bit picayune, but certainly you've got a lot of experience, Dr. Schramm, and lots of insight. Is there anyone working on a biomass energy production solution for flax straw that would eliminate the sight of somebody burning off the year's straw?

Mr. Schramm: — Yes. I have a lot of sympathy for that question for two reasons. One, I can't help driving by those kinds of occasions and having the same thoughts. And it's possibly worse for me because I know that we have the technology to do better, more sustainable things that can even make market sense. And I am also sympathetic because, is there anyone working on this in Saskatchewan? There are a number of companies, many of them small and fledgling. But another one that's been in this for quite a while is SRC.

So we have been working on projects aimed at the kinds of things to which you just referred for at least 15 years now and we have found, for example, that you can convert flax straw into useful things. As a chemist I'll also add that, once you have the carbon and the hydrogen, we can convert that flax straw into almost anything, including the fibres that are woven into our coats today. But there are things . . . Not everything makes market sense at this point in time.

So do we have the technology to convert to other things? Yes, we do. We can go to fuels, other energy sources, and we can go all the way down to products with local industry. And not just flax. It's possible to do the same kinds of things with waste grasses along the sides of highways, wheat straw, canola straw, also bark and branch debris from our forest and forest products industries.

So wherever you think of biomass that isn't currently being used, but potentially could be, there are technologies, not always the same technologies, but there are conversion technologies that can be used. We've evaluated many of them over the years, not just in terms of the science, but also the practicality of doing them on an industrial scale, anywhere from a farm that's interested in some energy independence possibly and the prospect of making their own fuel or power, to communities such as La Ronge that have local inventories has built up over history of sawdust and other materials that can be converted, on to slough grasses and other things.

So there's a basket of technologies that have been fairly well proven out, some in pilot demonstration scale. Sometimes it's the same technology, but you tweak the process for the different feedstock. Sometimes it's a little different.

We have found, like in many fledgling areas of our resource-rich potential in Saskatchewan, that the opportunities to do serious work with industry and business ebbs and flows as economic cycles and demands and pushes change. And so our strategy in these areas has been to stay as involved as we can throughout, but the actual amount of work we can do in any one year or space of years depends heavily on the market. Because as you may know, the vast majority of our revenues are derived through client contracts.

And that's good because it keeps us close to what industry needs and it keeps us close to market pull rather than technology push. But it's a challenge in lean years and when markets and capital funding become relatively unavailable in a given sector. So at the moment we don't have a high level of such activities. In the past we have, and we're waiting for the day to scale up again.

Some of the work we've been doing to maintain capacity, we've been doing in other jurisdictions where there are willing companies and funding so that we can keep advancing the technology. So just to give you one example, in recent years we've been working with an energy company in the United States seeking to convert municipal waste into ethanol for fuel in that country. And we've completed a body of work at the pilot demonstration stage with them, which looks a little odd seeing a Saskatchewan company working in southern Carolina. However it gave us the opportunity where the funding was available to advance technology to a higher level. So when there's an opportunity to develop such a test in Saskatchewan, we're much further advanced than we would have been before and we're now waiting for such an opportunity. So whether it's fuel or energy or products, there are a lot of options.

One of the interesting things we learned over the years, and then I'll see whether you wish to go further, but just one thing that is, I think, important to your question is that it's our assessment that we could convert Saskatchewan's entire fossil fuel use to waste biomass energy production if we wanted to without drawing on the food value of any of those crops which . . . without triggering that food-fuel debate, purely based on things like flax straw and slough grasses and things and bark and strands from the forest industry. So there's an entire inventory there that we could potentially use as a greenfield replacement.

We could still be producing the fossil fuels but doing other things with them, but the market's not ready yet to embrace that with their money. But the technology is well, well advanced, and we keep advancing it as best we can. So when the next market opportunity comes up and the entrepreneurs and the medium and larger companies are ready to move forward, we'll be there with them to take the next step. But it can be done, and we have the technology now.

Mr. McCall: — Thank you for that, Dr. Schramm. In terms of, previously we'd had a conversation about the emerging federal priority about cleantech, greentech, again I know for a fact that certainly builds on work that has been advanced by the SRC in different ways for many years now.

But I guess in terms of, as that federal innovation agenda emerges and with the indication around cleantech, different indications from the feds on different climate change targets that have been set, the provincial government having indicated a desire to go to 50 per cent renewables by 2030, let alone the global target of a zero carbon footprint by 2050, how does the SRC fit into that work? What sort of partnering is being

conducted with the different provincial agencies deployed at present, let alone what's coming with the feds?

Mr. Schramm: — Okay, that's a pretty broad one. At the highest level, if I can go from resource upstream, then downstream, and ultimately end up in doing things on the ground, if that's okay, just so I can keep my thoughts straight.

On the supply side, some of the obvious opportunities that we have specific to Saskatchewan . . . So we don't have tidal power to any great extent; however we do have options in wind, solar, geothermal, and some scale of hydro and nuclear, in addition to the various carbon options. We have been working with clients and with partners over the years, in similar fashion to what we were describing earlier, to try and advance technologies that could be actually used by industries and communities in Saskatchewan.

[14:45]

To the extent we've been able to, we've particularly been looking at opportunities that would be scalable so that there might be . . . so that we're not only looking at the big hits, but also things that could benefit local communities, particularly Aboriginal communities and northern communities who might need a different solution than what'll make sense for the highly populated parts of the province. So in all of those, most of those areas again, there are technologies that are available. We've had the opportunity over the years to prove many of them out at pilot if not demonstration scale, and occasionally pre-commercial.

So I'll just give you one example that's close to where we are sitting right now. Just south of Regina with Cowessess First Nation, we have with them developed a full-scale, full-power wind turbine with integrated energy management and battery storage as a full-out commercial demonstration. It is successful now; it is operating. SaskPower is a partner in this as well, so the community is positioned to be able to supply their power needs with wind, to use the battery and the power management system to balance the tricky issue of power generating times versus load demand without generating times, and the opportunity through SaskPower to sell excess power back into the grid, which benefits them with additional balancing and green energy source to the extent that there is excess power.

So that's one that's gone all the way to a first commercial placement. We're continuing that work with Cowessess and SaskPower, and looking to see where else that could be adopted. And that's an example of one that works not only in a . . . That's a single-turbine example that works for a local community, but obviously that can be scaled.

Mr. McCall: — As way of clarification there, federal dollars were involved in that as well, Enercan or Industry Canada dollars.

Mr. Schramm: — That's correct. Natural Resources Canada was a contributor to that project under one of their programs of the time.

So there are a range of those and our response has been, as usual for us — depending on market call and market need, whether it's communities or companies or industries as a whole — we've done, where asked, we've provided assistance for hydro and geothermal evaluations on operations, although we're not particular experts in those areas. And solar is another one where we've done lots of evaluations and demonstrations, including for SaskPower but also for small suppliers and potential end users. So we've been . . . We're continuing to work in those areas as funding and market demand allow us and call us.

So then I've already illustrated just a little hint of partnerships, and you've mentioned one yourself. So we also are watching with keen interest to see what kinds of programs — not just policies but programs — come out of the federal system, as well as our own province and other jurisdictions to see where the next opportunities within this broad spectrum of possibilities might be.

So we're watching to see what new programs may be coming out from Natural Resources Canada, with whom we have a long history of working; the National Research Council, with whom we have a historic, long history of working; but also other bodies like Sustainable Development Technology Canada and Canada Foundation for Innovation and so forth. So we don't, I think have any clear sense yet of exactly what opportunities are going to come up, but we're watching them, as is the ministry and others.

Another feature we have in terms of capacity is our own partnerships with organizations across Canada and around the world. So we're also networked with virtually all of the other research and technology organizations in Canada, provincially and territorially as well as the federal government, and selectively internationally. So depending on what opportunities next come and what our marketplace, in terms of our entrepreneurs and companies and industries, want to pursue, we'll try and pick from within that mosaic to draw in other partners as needed.

And of course that includes the universities, such as you were discussing earlier today. So we also have partnerships with the universities of Saskatchewan and Regina, but also the universities of Calgary and Lethbridge and Alberta and universities all around the world. We don't do everything with everybody. It's oriented to where there are opportunities for us to contribute something, but also to tap into expertise in other areas that we might be able to make use of.

So at the University of Regina, for example, we're most closely aligned with the engineering faculty, and we were a partner in helping build the faculty in the first place. We're still partners with them, not just in PTRC but in their broader activities. The University of Saskatchewan, we partner more in chemical engineering, chemistry, and physics, and different programs, and similarly with other academic institutions. So there's a broad net there.

If you go beyond the supply side, we have manufacturers in Saskatchewan and industries in Saskatchewan that would like, that would be interested in generating clean power, generating other ways to store and transport power, and manufacturers and resource industries that are power users that have a keen interest in not only maintaining power supply at reasonable price, but if

possible from increasingly sustainable sources. So that represents a whole other sheath of both potential partnerships and potential clients. Often with us, it's both at the same time on the use side of these technologies as they get proven out.

But again there's . . . while there's always room for more discovery research and more knowledge that could lead to revolutionary new things, there is also an amazing slate of technologies that are at least field test, in not field demonstration ready, that could be potentially just a few years away from commercialization, rather than say 20 years to develop something genuinely new.

Mr. McCall: — Any observations on the how well served the discovery side of the equation, the applied research side, the commercialization side of the . . . How are those all being served right now? Are we, is discovery going wanting and are there applied projects that we should be . . . What are the opportunities out there that maybe are going well but could go better?

Mr. Schramm: — In Saskatchewan? So my discovery chemistry days are a bit behind me, but my sense is indirect on those because what my sense is mostly what I learned through our partners that are focused on discovery research because we don't do that at SRC almost ever. My sense is that we have far more capacity and talent and ideas than we have funding to take forward. So we have, I think, a healthy level for our population and our level of industrialization. I think we're in pretty good shape on a global relative sense. However there is, we clearly have enough capacity to be doing much more. So there's an opportunity there.

My sense is it's pretty much the same across as you go downstream, if I can call it downstream, into applied research and development through into commercialization, that we have a host of entrepreneurs, inventors, small- and medium-size enterprises and some of the world's biggest companies operating in Saskatchewan. So I think we have a pretty healthy both industrial and innovation ecosystem. But again we already have the capacity to be doing more, and every person I talked to across these subsector areas has the same sense that we could be doing more.

We might have to hire a few more people and get a few more facilities. So I don't mean that we have people sitting idle or anything like that, but everyone seems to have a vision that we could be taking on more, and we could be first in the globe in many, many areas that, no, don't just look and sound good, but impact on our economy and our society.

One thing we have going for us, that I rarely see anywhere else in my travels around Canada and the world, is our innovation ecosystem is very collegial and very prone to collaborate. It's almost unheard of to come across any serious degree of competition other than a healthy kind. I can't think of another province in Canada that has that level of cooperation, and I would say that also speaks to the potential, given an opportunity to be doing more together.

Mr. McCall: — Okay. Thank you for that. And again, time is not only precious, it's unfortunately limited in our regard. But the top three opportunities that need more of that support and focus, any observations on that?

Mr. Schramm: — We, I think, have a really interesting opportunity right now which, top of mind for me, is reduction of methane emissions from oil wells, especially those off the gathering systems. It's difficult to turn on the TV or pick up a paper without hearing about this discussion, whether it's here in Saskatchewan or in Paris or anywhere else around Canada and the world.

I think it's part . . . It's not a new opportunity but the discussion is so alive at so many levels across so many sectors — government, industry, society, environment, everywhere else. The reason I think it's an opportunity for us is we could be world leaders in this area. We share some of the problem. We have wells that are emitting. Everybody that I am aware of wants to see those reduced, including the operators themselves.

Most of the discussion is about trying to advance that in a sensible way. And again I think we have the power collectively to advance that, partly because — and this relates to what I said earlier — we see a suite of technologies developed in various places, whether here in Saskatchewan or around the world, that are ready to be tested and potentially demonstrated in real-world, physical situations. And there's an opportunity to get together, whether it's suppliers and users, inventors; see what works, get it tested out, and make it available to the industry for deployment. The industry itself seems very, very willing to move on that now.

And so I think that's an opportunity where Saskatchewan could lead the world. And whatever we might develop here could be sold around the world. So there's one that's, I think, right in front of us right now. We've just launched a Centre for the Demonstration of Emissions Reductions with that in mind, to try and make sure we do our part to try and make available such testing and verification, but ultimately we could really advance things with partners and industries' engagement. So we'll see where that goes. That's one.

Another one is diamonds. There are diamonds all under Saskatchewan, including under where we're sitting right now, not all of commercial grade. But there's an economic opportunity there for the province. We have the resource. We have the attention of the world's giants, as you may have seen today or yesterday in the paper. And there's room to move on that and see what can be done.

Similarly in rare earths, there's an on-and-off frenzy in the manufacturing industry around the world about the potential future supply reliability and prices of rare earth minerals. We have reasonable quantities, not only in Saskatchewan but in neighbouring jurisdictions that might like to do the milling in Saskatchewan. So again there are opportunities that could be realized in a very reasonable period of time, our lifetime if not much, much sooner. And like so many other things in Saskatchewan, we have the resource base and we have the opportunity to lead technologically. Why not make it happen here?

And we just talked earlier about the oil and gas industry. I think the biggest opportunity is to help them with emissions reductions. We're actively, have shifted most of our programs

in the light and heavy oil areas that we've talked about and you touched on earlier with Innovation Saskatchewan, into efforts to help them with cost efficiencies and productivity improvements. But in the next couple of years, as they come out of that phase, their attention is going to turn back again to increasing production and working toward more sustainable practices. So there's three across those sectors.

Mr. McCall: — Thanks very much. Just for the record, I'm not asking you to pick my stocks either, but . . .

A Member: — That's fortunate.

Mr. McCall: — Thank you very much for that. It certainly is a pretty . . . It's always an exciting time out there on the research horizon, and certainly it's always interesting to have the conversation with SRC in terms of what's going on and what's coming up.

I am contractually obligated to ask you about . . . The SRC came up for some discussion in a relatively recent Ombudsman's report. One concern identified around payment of senior staff, another around sort of a year-end purchasing of a mass number of iPads. I guess having had those problems identified by the Ombudsman, what steps has SRC taken to address those problems?

Mr. Schramm: — The commissioner addressed several allegations that were made by a former and unhappy employee. We believe all of those accusations are completely without merit, so we were pleased that the commissioner, in her evaluation and conclusions, found no wrongdoing in any of the areas that were raised.

[15:00]

A little further under the hood, she formed an opinion on two areas which we have a disagreement, one of which is about the iPads, so I appreciate the chance to try and set the record straight. So there was a bulk purchase of iPads some years ago which we did for business needs. These were to be issued to employees as a tool. This was never an issue of gifts. The commissioner found that we were using them for business purposes. We had done this for several reasons, one of which is we had a significant proportion of our staff that were without useful computing capabilities which, as you can imagine in a research council, can be a challenge, and we were looking for a cost-effective way to deal with that. Some of the needs were limited but nevertheless real, and we evaluated the full scale of options for that.

The commissioner noted that, but remained unconvinced that some of the folks that already had computing devices available to them also were issued iPads. And the reason that we purchased them and issued them to all of our employees is we had more needs to satisfy than just the computing needs of one segment. Other things we were after were safety related, communications related, and job performance through calculation related, and for that we needed portable devices because we'd gone to a point where all of our safety-related information, practices, and policies — including chemical safety information — has gone electronic these days. And so in order to access in a timely manner, you need electronic access. So that was something we needed for everybody. And as you might expect, our folks have to operate in a variety of environments, not always in their offices. So we're often out in the field in labs, in plants, and in a variety of different areas, and we needed portability. So we needed something portable for everyone, so that was another facet.

And then the commissioner wondered whether it was appropriate to sole source, and she made a comment in her report about paying full price. So we did follow our procurement practices, which do allow sole sourcing in certain situations, which we had brought to our board of directors at the time. We had evaluated other kinds of options. One of the reasons . . . The primary reason we went to the iPads was because we had just changed our corporate standard for cell phones at that time away from BlackBerrys to iPhones, and while we didn't have to go to iPads, if we'd gone to another tablet we would have incurred additional costs in getting new software for all of those whereas with iPads we could use the same software we'd already paid for for the iPhones. So we had a cost savings on that.

And we waited, and at the time we made the purchase, Apple had just brought out a new version of their iPad. We were able to negotiate a lower price on the discontinued ones. So although when the commissioner says it's the full retail price, it was the full retail but discounted price, because they were taking them off the market in order to sell the new version. We'd assessed that the old version would perfectly well meet our needs for their foreseeable useful life and so rather than spend the money on the newer one, we took the lower price on the older ones.

Subsequent to that — this is past the commissioner's findings and recommendations — we have continued to find so much value in that practice that we have continued to issue iPads to all of our employees as they have been hired on, although we get the old ones back when there's attrition and people leave. So we still have found it to be a sound business proposition for us to the extent that we still do it today. We still issue them as standard equipment to our employees when they join the company because we find the advantages in safety, productivity, and communications far outweigh the cost.

So thankfully that is, we do agree on some points. She found no wrongdoing and we agree with that. She raised some concerns and formed an opinion, but on a slightly less broad sense of what was in front of us than I see. In terms of going forward, if I had to do something differently, to do it all over again, I would put it all in writing sooner. But that's the only thing we'd change.

The Chair: — Well thank you very much, Dr. Schramm, for those answers today, and I thank the members for the questions. We've reached our agreed-upon expiration of time. It's 3:05 p.m. and I would like to give Minister Harrison an opportunity to have some final words if he so wishes.

Hon. Mr. Harrison: — Thank you very much, Mr. Chair, and thank you to the committee for your attention. It's appreciated. Thank you, Mr. McCall, for your questions, and I'd very much like to thank Dr. Schramm for your attendance here today. Mr. Hill, thank you. And publicly thank you, Dr. Schramm, for your leadership of SRC now for many years . . . 15?

Mr. Schramm: — 15.

Hon. Mr. Harrison: — Fifteen years at the helm of SRC, you know, one of our premier companies in this province. So I want to acknowledge that and say thank you once again, Mr. Chair.

The Chair: — All right. Thank you. So finally I need a motion of adjournment from one of the members. Mr. Steinley has so moved. Are we all agreed on that? Are we agreed?

Some Hon. Members: — Agreed.

The Chair: — Carried. All right. Maybe you wanted to stay a little longer, but anyway, this committee stands adjourned until Tuesday, June the 28th at 3 p.m. Thank you all.

[The committee adjourned at 15:06.]