# STANDING COMMITTEE ON THE ECONOMY

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**STANDING COMMITTEE ON THE ECONOMY**

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Ms. Laura Ross
Regina Rochdale

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

[The committee met at 19:00.]

**The Chair**: — Good evening committee members, and welcome witnesses and to the minister. This is the Economy Committee, for those that might be tuning in at home. And we have a few substitutions tonight. Mr. McCall is here for Mr. Belanger, who is a permanent member, and Mr. Buckingham is here for Mr. Bonk this evening.

I'm asked to table a document, ECO 6-28, Ministry of Agriculture: Responses to questions raised at the June 21st, 2016 meeting. And I'm also wanting to note to the committee that pursuant to rule 148(1), the estimates and supplementary estimates for the following ministries and agencies were deemed referred to the committee on March 30th, 2017 and March 22nd, 2017, respectively. And they are vote 1, Agriculture; vote 23, Economy; vote 26, Environment; vote 16, Highways and Infrastructure; vote 84, Innovation Saskatchewan; vote 35, Saskatchewan Research Council; vote 86, SaskBuilds Corporation; and vote 87, Water Security Agency.

This evening we are beginning our consideration for Innovation Saskatchewan as well as for the Saskatchewan Research Council. We started promptly at 7 p.m. We are scheduled to go to 8:30. We will have a brief recess at the appropriate time to switch officials, and we'll try and do that as quickly as possible.

**General Revenue Fund**
**Innovation Saskatchewan**
**Vote 84**

**Subvote (IS01)**

**The Chair**: — We are going to begin this evening with vote 84, Innovation Saskatchewan, subvote (IS01). Mr. Harrison, welcome, as I mentioned earlier. I'll leave it to you to introduce your officials if you so wish or to make an opening statement. So the floor is yours.

**Hon. Mr. Harrison**: — Sure. Well thank you very much, Mr. Chair. I appreciate that. And thank you to members for being here tonight for the Innovation Saskatchewan estimates. I will introduce officials here with me this evening. On my left, Wes Jickling, the chief executive officer at Innovation Saskatchewan. On my right, Kari Harvey, chief operating officer at Innovation Saskatchewan; and on Kari's right, Kim Krywulak, acting director of financial reporting at the Ministry of the Economy.

And I do have a few brief introductory remarks, if the committee will indulge me. I think members know Innovation Saskatchewan is the provincial agency responsible for facilitating and coordinating the government of Saskatchewan's strategic direction in the areas of research and 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.

Mr. Chair, the plan for growth notes that our province's future economic success may increasingly depend on knowledge and innovation. Innovation Saskatchewan is committed to achieving that goal. It provides financial support and directional oversight for institutes that are important to Saskatchewan's innovation economy.

The following are examples of contributions to be made in 2017-18: $2 million in support for the Petroleum Technology Research Centre, which I think members know as PTRC. The PTRC uses these funds, along with contributions from industry, to manage a research program targeted at better understanding Saskatchewan's petroleum reservoirs and how to increase production. The bulk of PTRC's work is focused on improving recovery in heavy oil deposits found in the Lloydminster region. In 2017-18 PTRC will expand its program to include research targeted at increasing production in the province's light oil in very tight reservoirs such as the Bakken.

$1.2 million in funding support for the industry-led International Minerals Innovation Institute, IMII. This organization provides project management and funding for research and education, improving the capability of Saskatchewan's mineral sector to address its needs. $5.63 million in funding will go the Vaccine and Infectious Disease Organization-international vaccine centre, or VIDO-InterVac; $4.1 million will be provided to the Canadian Light Source synchrotron; $3 million in this budget will go to the Innovation and Science Fund, which provides funding to Saskatchewan universities, colleges, and research institutes. Innovation Saskatchewan's contributions will support research projects that have received funding approval from federal programs and that require matching support, thus leveraging federal research funding.

$2.7 million will go to the Sylvia Fedoruk Canadian Centre for Nuclear Innovation for nuclear research and development strategy. And related to this, I'm pleased to report that the Saskatchewan Centre for Cyclotron Sciences is now fully operational and producing medical isotopes for Saskatchewan's PET/CT [positron emission tomography/computerized tomography] facility at the Royal University Hospital. And it's interesting to note this is actually the first time medical isotopes were produced in a facility not being a nuclear reactor. This has reduced patient wait times, delays, and cancellations previously experienced due to the reliance on isotope supplies from Ontario. $5.63 million is the amount going into the Saskatchewan Health Research Foundation.

In addition, Innovation Saskatchewan manages the Saskatchewan Advantage Innovation Fund. This fund was established to facilitate innovation in our province's core economic drivers, which includes of course agriculture, oil and gas, and minerals. The fund will receive $886,000 from Innovation Saskatchewan in 2017-18 to address projects that are put forward by a group of companies to benefit a sector; address technologically challenging issues, those for which the solution cannot be developed by assembling existing pieces of technology; describe the path, the implementation, and the benefits expected; and have a significant portion of the initiatives funding provided by sources other than the Saskatchewan Advantage Innovation Fund, especially from the private sector and sector that will ultimately benefit from the project.

In 2016-17 the following projects were approved under this fund: evaluation of a new enhanced oil recovery process for the Viking field that would expand the amount of oil that could be recovered from southwestern Saskatchewan; advancements of a field heavy-oil upgrading technology that has the potential to increase the value of the oil and reduce the cost of pipelining; the evaluation of two steam generation technologies that have the potential to increase heavy oil recovery, reduce the footprint of surface equipment, and that do not emit greenhouse gases; support VIDO-InterVac's efforts to use its swine-based model for the Zika virus, which will provide a better understanding of how will the virus behave in humans, as compared to the conventional approach on testing in mice. And we just had a very exciting announcement on that not that long ago.

The project proposals for this year are still being considered. Innovation Saskatchewan will continue to support and facilitate research development in commercialization of new technologies that are important to the province's growth which includes strategic focus on Saskatchewan technology entrepreneurs and start-ups, referring to entrepreneurs and companies that are innovating a new technology and are trying to build a company around that technology in the province. This includes hiring workers, creating new products and exports, contributing to the growth and diversification of the provincial economy.

Innovation Saskatchewan has undertaken a comprehensive engagement of the technology sector in the province. In 2017-18 you can expect to see the agency and several provincial and federal partners working closely together to offer technology entrepreneur programming, mentorship, and incubation supports to stimulate growth and success in this emerging sector of our economy. We will be encouraging and facilitating joint research and development projects between industry, academia, and technology entrepreneurs.

Saskatchewan has world-class natural resources, world-class industrial players in mining, oil and gas, and agriculture. Our province has world-class research and researchers, and technology entrepreneurial talent. By creating opportunities and encouraging these different sectors to collaborate around specific technical challenges faced by industry and society, then together we can improve our ability and effectiveness to create innovating solutions.

A concrete example of this initiative took place two weeks ago at the IMII in partnership with the University of Saskatchewan. An event named AIMday [Academic Industry Meeting day] was held, which brought together the technical experts from some of the world's biggest mining companies including Cameco, PotashCorp, Mosaic, K+S, Agrium, and others, and some of the leading academic researchers in our province to solve some specific technical challenges being experienced by the mining companies.

A number of potential industry academic research projects have been identified in the areas of big data, analytics, and environmental protection. Our objective is to replicate this collaborative approach, connecting local industry with local researchers and local technology entrepreneurs to try and solve local technical challenges.

Mr. Chair, Innovation Saskatchewan's investments are paying off through the Saskatchewan Advantage Innovation Fund and IS-supported [Innovation Saskatchewan] VIDO-InterVac project targeting the Zika virus. VIDO-InterVac made advancements in Zika research last year, developing the world's first swine model for the disease, which is a very important thing.

Our funding and collaboration with federal and VIDO-InterVac's own-source funding will support the completion or fleshing out of the swine model so that it delivers better, more detailed data to researchers and pharmaceutical companies about the progression and development of the disease in humans.

A project jointly funded by the Saskatchewan Advantage Innovation Fund and PTRC is using facilities at the Canadian Light Source to better understand the process for creating foamy oil and heavy oil reservoirs. Foamy oil is the primary mechanism by which the oil is driven from the reservoir to production wells. The CLS [Canadian Light Source Inc.] enables researchers to see its creation at the submicroscopic level, learning how it's formed so field operators can better control the extraction process.

A new bioremediation process was developed that will greatly reduce the cost and increase the effectiveness of cleaning up hydrocarbon- or oil-contaminated sites. The project, funded by SAIF [Saskatchewan Advantage Innovation Fund], developed the process to the point that it's now ready to be taken to the field. This process has the potential to rehabilitate the soil and enable its use like the site was never contaminated, as opposed to taking the contaminated soil to the landfill.

I'll conclude my remarks by saying that Innovation Saskatchewan's support is making a difference and is helping to advance the Government of Saskatchewan's innovation agenda. This is contributing positively to our goal of securing a better quality of life for all our people. And I look forward to questions and comments from the committee. Thank you, Mr. Chair.

**The Chair**: — Thank you, Minister Harrison, for that overview of what's happening in your ministry. It sounds like some very interesting and promising work is going on. I'm sure there are questions from the committee that would like to be asked. I recognize Mr. McCall. He has the floor.

**Mr. McCall**: — Thanks very much, Mr. Chair, Minister, officials. And I should say, there's a bit of change. I'm relatively new to the Innovation Saskatchewan file, but there's a bit of change in terms of the lineup for officials. And I guess that would be a good place to start, is with a word of welcome and good luck in the important work that you have before you with Innovation Saskatchewan. To those new here tonight, or, you know, there's lots of different roles that come back, but I guess if you could, Mr. Minister or Mr. Jickling or Ms. Harvey, if you could talk a bit about what's gone on at the leadership level with Innovation Saskatchewan over the last year.

**Hon. Mr. Harrison**: — Right. Well, good question, and we are going through a period of change at Innovation Saskatchewan. I think you'd probably remember last year when we were here where Mr. Konecsni had his last appearance as he was retiring

shortly after estimates last year — who provided great service to the province actually, who I just saw this evening at the Tansley Lecture and had a nice chat with. He retired and Mr. Wes Jickling, who had been a senior executive in the private sector, before that though had been a deputy minister, an associate deputy minister here in government, had served in government for many years. We enticed him back, to come back to Innovation Saskatchewan.

Kari Harvey, of course, has had a long career in the public service — 25 years now, Kari? — and I think that we're very fortunate and well served to have Kari at Innovation Saskatchewan. And I'd point out to you two great gentlemen who had done a huge amount of work in the foundation of IS and the building of IS: David Grier and David Katz are going to be retiring shortly, both very shortly, who had been our chief strategist and done some great policy work, both of them, over the years. So we are in a period of transition, but I think the organization has matured significantly from our foundation about nine years ago, 10 years ago now, and I think we're making good progress.

**Mr. McCall**: — Should we expect to see someone else from Intergovernmental Affairs coming into those positions? Or I guess I'll quit pulling your leg and get serious with the questions.

Have there been any costs incurred in terms of the last year around buyouts or positions changing hands?

**Hon. Mr. Harrison**: — No, there haven't been.

**Mr. McCall**: — Thanks for that. In terms of — and again, there'll be some kind of picayune questions off the top, but I want to make sure that I get them in — in terms of the direction that's gone out from executive government on the 3.5 per cent reduction to public servants in wage or benefits or time worked or however that gets constituted, how does that impact Innovation Saskatchewan?

[19:15]

**Hon. Mr. Harrison**: — Okay, well what I would say on that, I was just asking Wes how many in-scope staff we have and I think it's about five or so. As you know, IS is a small, you know, FTE [full-time equivalent] complement — 11 in total.

What I would say as a general statement, Mr. McCall, which I'm not sure if I've said in the Chamber but I've definitely said out in the rotunda on a number of occasions, we're not giving specific direction on how that 3.5 per cent is to be realized. That's going to be bargained with the provider unions with regard to that. So you know, I would say that we have a target as far as the reduction, which is a 250 million target across government. How that's going to be realized is going to be, you know, bargained and discussed.

**Mr. McCall**: — What's the straight-line equation in terms of what the expectation is around Innovation Saskatchewan's contribution to that 250 million?

**Hon. Mr. Harrison**: — Right. Well, you know, there's an expectation that we'll have, I think, 3.5 per cent less compensation costs at Innovation and, you know, we're comfortable that we're going to be able to get to that point.

**Mr. McCall**: — Again, what is the average annual salary expenditure at IS — about 1.1 million? Am I correct in that?

**Hon. Mr. Harrison**: — Yes. Approximately 1.428 million for salaries and benefits and 11 FTEs, as I indicated earlier.

**Mr. McCall**: — Thank you for that, Mr. Minister. In terms of . . . oh, it would have been about 11 months ago we started hearing a lot about transformational change and certainly Innovation Saskatchewan and its work around commercializing new technologies, playing that nurturing role. There are those that would look at the role that Innovation Saskatchewan plays and size it up alongside Saskatchewan Research Council, size it up alongside the different sort of granting or flow-through funding work that a ministry like Advanced Education performs, and look at what's happening with Innovation Saskatchewan and wonder if there aren't savings to be made or if there isn't some kind of realignment. Like if everything is on the table and it's a time of transformational change, what sort of examination of the role of Innovation Saskatchewan has been undertaken? And what sort of consideration of the different functions that IS performs and how that aligns with functions performed by other parts of executive government, what's the analysis that's gone on?

**Hon. Mr. Harrison**: — Well I'm very comfortable and I would say that executive government is very comfortable with the structures that we have in place. You know, most provinces have developed in the last 10 to 15 years specialized agencies that are responsible for the comprehensive innovation agenda. You know, we have SRC [Saskatchewan Research Council] which is, we're going to be talking about in 40 minutes or so here, which does great work. And, you know, we'll be able to talk about that in more depth in a short while.

But, you know, the distinction, SRC has the facilities and ability to do a lot of applied research, partnering with private sector partners and, you know, doing that research on site, whether it be at their facilities in Saskatoon or Regina or having the ability to do that in other parts of the province. As far as IS, you know, we have the kind of broader view of the comprehensive innovation agenda and focusing on what are our core priorities as a province. And SRC does that as well as far as the core priorities as far as their applied research work.

So, you know, we look at partnering through our agencies, which are very specialized. IMII or, you know, ISF [Innovation and Science Fund] is a bit different but CLS or PTRC which have very specific mandates and very, very specific expertise and very deep expertise in particular policy areas that are priority areas for the province.

So, you know, PTRC as an example has done a ton of work focusing on heavy oil recovery. You know, we have in the Lloydminster field heavy oil fields which are mature heavy oil fields but recovery rates that, you know, remain stubbornly low and would have remained even more stubbornly low but for the research and investments we've made into prolonging the life of those fields through a number of different technologies, partnering with the companies as well.

We're expanding into light tight this year, as that's become a more, you know, more significantly important part of our conventional oil production. So that'd be one example of PTRC, but I mean we need to have an agency that is responsible for overseeing this entire innovation agenda and working with our specific agencies to fund. That's what we do to some degree as it relates to these specific agencies.

And we did have, you know, transfer of more responsibility over from some of the other ministries in government in the last two years. The Health Research Foundation grant came over to us. We had the CLS funding, VIDO-InterVac as well, which came over because we're good at it.

We've established, I think, a very positive reputation as contributors on the boards of those organizations, being able to bring the provincial interest to bear as a funding partner along with, you know, other expert members of those boards. Because it's not solely funded by us. These are funded, you know, by the Government of Canada, by us, by private-sector partners as well. So I mean having that agency with that provincial outlook and provincial mandate, it's completely in line with what other jurisdictions have done over the past decade as a best practice.

**Mr. McCall**: — Thank you for that, Mr. Minister. And certainly I'm a Regina guy, so I'm most familiar with the PTRC and the great work that is done there. And, you know, thanks a lot to government for hiring away Ken From back to SaskEnergy as per the law of recycling and all these things.

So, you know, in terms of the institutions themselves and the work that is on offer, you get no sort of argument from me about the lack of merit on those fronts. I guess the question I have, though . . . We've got your colleague, the Finance minister, in another committee room tonight considering certain of the aspects of the budget. Yourself, you're a treasury board minister, Vice-Chair of the treasury board, I believe. And that's how I used to understand the budget process worked and that's where things got figured out in terms of what was best aligned and what was not.

But over top of that we have the transformational change process, and I believe your colleague the Finance minister has talked about the 100-plus meetings that have gone on in terms of everything being on the table and this question of realignment and who's doing what and who's doing it best. So I guess the question again is, has there been a specific consideration of the worth of Innovation Saskatchewan and the work that other institutions or agencies of government undertake? Has that been specifically affirmed by executive government, and if so, should we expect to see more government activity coming to Innovation Saskatchewan's way, as per your reference to the SHRF [Saskatchewan Health Research Foundation] money.

**Hon. Mr. Harrison**: — Right. Well I would say that, you know, as I kind of said in the beginning of my last answer, you know, government is committed to IS. And yes, we've considered the whole of government approach. And I think the fact that you've seen additional responsibilities transferred to IS would indicate the direction that government is going in as far as having, you know, the innovation agenda be a government under the roof of Innovation Saskatchewan.

And, you know, I would say also I appreciate your comments about the value of the investments, and PTRC's a good example. But the value that we get from what is in the grand scheme of government, you know, a fairly modest amount of resources allocated to innovation, we get an incredible return on that investment.

And, you know, you need to look no further . . . And a partner in a lot of this is agriculture, who are another part of the innovation ecosystem. I mean, you know, 30 years ago there wasn't a pea or lentil industry in Saskatchewan. Now we're one of the biggest exporters on the planet. We had a discussion with the Indian High Commissioner, or Canadian High Commissioner to India just last week, and we've been working through the issue with peas and lentils there. But I mean it's one of the biggest exports from Canada to India are Saskatchewan peas and lentils. That industry didn't exist.

You know, as far as our ability to extract heavy oil from the Lloyd field particularly but other areas too, I mean, we've increased our recovery rate of the oil in place by, you know, a significant amount. This is worth billions of dollars to the taxpayer, the province, for what are pretty modest investments.

The work that, you know, IMII is doing, as far as research into ways that we can do things better in the mineral extraction field, potash or uranium. I mean, we have partners who are putting literally hundreds of thousands of dollars a year, private sector companies who are . . . They wouldn't be making this investment unless they thought that they were getting a significant return on that investment. So you know, I'm pretty comfortable. And we talk about how it is validating when we have those sorts of investments being made from the private sector. It's not just, you know, the university and Government of Canada and Government of Saskatchewan that are making these investments; it's in partnership with industry. Everybody has a genuine stake in the outcome, and those investments wouldn't be made unless we were getting outcomes and we are.

The medical isotope example is a great one too at the Fedoruk Centre. You know, we've made tremendous progress. We're going to have the opportunity to actually produce medical isotopes in this province that will supply the Western Canadian market if not more than that, not having a reactor creating them but because of research that's been done here, world-leading research that's been done in Saskatoon to provide those isotopes, which is increasingly important. We know what's happened at Chalk River and there'd been a series of issues with regard to the production of isotopes there, and we have been able to step up and actually create isotopes here in this province.

[19:30]

You know, I guess that's a long way of saying that executive government has a great deal of faith in the approach that we're taking and are very comfortable with the role that IS is playing in being responsible for that comprehensive innovation agenda.

**Mr. McCall**: — Thanks for that. I guess this would be good a time as any to ask what's the leverage on the investment year to year with Innovation Saskatchewan. And I just remember, you know, a number of years ago Dr. Schramm telling us about for

every dollar went into the SRC, the kind of returns that were evident. Anyway what's the leverage and what kind of economic activity in dollar figures has been generated by the dollars under consideration here tonight, both for the year previous and what is expected for the year to come?

**Mr. Jickling**: — So there's a few, I guess, numbers here that clarify the leverage question. The first one would relate to a fund that we have, the Saskatchewan Advantage Innovation Fund, and in 2017-18 we've got $866,000 allocated towards that fund. But overall in the history of that fund which began in 2011-12, there has been $9 million contributed to 25 projects, and the overall leverage that we've got is 3 to 1. So for every dollar that we put in, it's slightly more than $3 to every one that we put in. And so I guess how that breaks down would be industry contributing well over half of those dollars and the federal government and federal institutions coming up with . . . I mean the cost-sharing of those projects.

If you drill down into some of the specific sectors or some of the areas where those projects, those SAIF projects are actually researching, for example, enhanced oil recovery, the leverage in those, like the SAIF grants that have gone to R & D [research and development] projects in enhanced oil recovery, that's in the range of 5 to 1. So every dollar that Innovation Saskatchewan puts in, it leverages five dollars from the actual technology developer and from sort of the industrial partners or end-users of the technology.

In the mining category, we have about eight of those projects funded over the last five years, six years. The leverage ratio there is about 3 to 1. So I guess that tells you on the private sector and the R & D that's funded by the SAIF fund. On the ISF fund, which is the Innovation and Science Fund, which is generally matching funding for university projects to purchase . . . so university researchers to purchase equipment, that's on a 1 to 1 leverage with the federal government. When a university researcher gets an NSERC [Natural Sciences and Engineering Research Council of Canada] grant, the fund is there intended to match that. So that's 1 to 1.

And then the institutes that we fund, CLS, VIDO [Vaccine and Infectious Disease Organization], those ones are leverage. For example at CLS, we would fund roughly 13 per cent of that, and I think 60 per cent of the funding would come from the federal government. And that of course, the federal funding is contingent on the province and other funders coming to the table. So it's a pretty healthy leverage ratio.

**Hon. Mr. Harrison**: — Yes, and I would just draw the distinction as well between kind of economic activity, spinoffs. I don't know if we have that in front of us or we collect it in that way. Maybe we do, maybe we . . . I'm not sure. But I mean, this is just pure leverage in terms of the money we put in that we leverage from other sources on top of that.

**Mr. McCall**: — Do you account for the overall spinoff factor? Or what the dollar value of economic activity that is generated from . . .

**Hon. Mr. Harrison**: — The organizations themselves would probably be able to provide that level of detail. We were just recalling a meeting we had with VIDO-InterVac a short while ago, the very recent past. I forget. A couple of weeks ago. And you know, they used the number of, you know, $14 of spinoffs for every dollar of investment. You know at SRC, which we do keep pretty close tabs on, it's 22 to 1 at SRC. But we would have to ask our partners to kind of provide that specific data to get it.

**Mr. Jickling**: — So I'm just going back to the SAIF fund. When applicants come in and make an application to the fund one of the questions we ask is for an analysis of what is — the question you're asking, right? — what is the economic impact. And they provide us their estimates, and so I can tell you those. I mean that's not a, you know, a comprehensive kind of data-driven analytical number, but what I can tell you is what the companies and the applicants themselves propose.

So one of the projects that we supported last year, an enhanced oil recovery project, I mean what they're seeing is the end . . . You know, if the R & D is successful, what we're looking at is about $150 million a year in benefit to the industry. An assist project, it's another enhanced oil recovery project, they're projecting $35 billion of increased revenue for the industry over the life of the technology. And there was a genomics project related to sort of the management of environmental outcomes around mines and other industrial sites. You know, they're projecting $10 million of additional, sort of, economic benefit over the next five years.

So I mean those are from the applicants themselves. But in terms of, you know, a comprehensive assessment, we just haven't . . . I mean, I don't have that numbers in front of me.

**Mr. McCall**: — Well thank you for that. In terms of the sort of carrying capacity and . . . You know, it always sort of begs the question from simple minds such as mine, which is, okay you've got $27.7 million under consideration here tonight. You take out the roughly 1.5 for salaries. So are there opportunities going wanting, but for the amount of . . . or limits to the amount of monies that can be put forward here? Like can you double the money that's put in the hands of Innovation Saskatchewan and then that still provides the different leverages that have been discussed here?

**Hon. Mr. Harrison**: — So you're asking, I mean, if we were to, you know, put three times the money into IS, would we be able to leverage still three times the . . .

**Mr. McCall**: — No. I guess in terms of your planning, yes, that is what I'm asking. But in terms of how you come up with the dollar figure under consideration here tonight, is it truly demand driven? What do you do to forecast demand? What do you do to anticipate where different of these innovative markets are moving? Are you leaving opportunities on the table, I guess is what I'm asking.

**Hon. Mr. Harrison**: — Well it's a good question. I would say that we really we try and be very strategic with the investments that we make. I mean there's kind of unlimited opportunity, I guess, to invest in kind of all manner of different things, and there'd be folks who would be more than willing I'm sure to pitch projects that, you know, they would feel worthy of government investment in them.

What we really try and focus on are the . . . And we've done a lot of work on this. This wasn't just kind of stuff we came up with. We did a lot of research on, you know, where do we have competitive advantages and comparative advantages with neighbours in other jurisdictions. Where do we have, you know, infrastructure existing right now that we can build from and build off of in a way that's going to be most efficient from an innovation point of view?

So I mean, the three sectors that we focus on I mentioned a couple of times already, but you know, agriculture, oil and gas — energy in kind of a general sense — and minerals mining. These are the areas where we believe we can really have a world-class impact. And we already are having a . . . You know, we have world-leading companies in their jurisdiction in these areas. We have, you know, significant work that's been done over decades and generations in some of these areas.

So this is where we believe as a Government of Saskatchewan — not as an organization, political or otherwise, but as a government — that we can have the most impact and most bang for our buck, so to speak, for our innovation dollars which are scarce, limited dollars. So we try and be very, very strategic about this. You know, are there opportunities that go wanting? I mean it's not kind of a choice with . . . as you know, Mr. McCall, you know as a former minister, governing's not necessarily a choice of good and bad ideas. It's a choice of good and better ideas or good and kind of a bit better ideas.

You know we get a lot of good ideas put to us through our Advantage Innovation Fund which is a fund that is bid on essentially. I mean projects come forward, and they say we believe to be . . . You know, if IS would support this project, it would be really beneficial. So you know, we have to work with proponents and make decisions. And I can tell you, it's not me making the decision. We have a board comprised of, you know, experts in the field who are making these recommendations as to where we can have the most effective use of our dollars that will have the biggest impact economically for the province.

So, you know, there's a lot of good projects and a lot of great research being done out there and a lot of very talented entrepreneurs, I would say. So I mean it is a challenge sometimes, because of the quality of some of the work that's being done, to pick one project over another.

**Mr. McCall**: — In terms of, say for ISF, have those funds been fully subscribed each year on offer?

**Mr. Jickling**: — Yes. For example, last year SAIF was fully subscribed. Definitely we spent, we fulfilled the $886,000 budget for that, and we expect the same in '17-18, and ISF as well. I mean we have sufficient applicants for that coming from the universities, U of S [University of Saskatchewan], U of R [University of Regina], and expecting applications also from polytech in '17-18. We see a good pipeline of projects coming there.

**Hon. Mr. Harrison**: — Yes. I would just add, you know, ISF's a bit different. But again it's kind of, it can be a challenge sometimes picking projects. But that being said, we're not going to pick a project just because we have budget that hasn't been allocated yet either. If we don't feel that the project is . . . And we have a metric how we rank all of these things as well, which is done in an objective way so that . . . [inaudible interjection] . . . ProGrid, that's right — on how we manage and rank these projects.

**Mr. McCall**: — I understand it's way better than that amateur grid, but we'll see how that goes.

In terms of the monies that are transferred to SHRF, is there — in terms of the criteria, the reporting criteria, the accountability metrics that IS uses — is there something that in terms of the, you know, forwarding grant dollars . . . What does IS look for in terms of the administration component of . . . So in the case of SHRF 2016-17, the administration costs of $2 million to hand out 5 million in grants, am I understanding that correctly? And is that an appropriate ratio that Innovation Saskatchewan is looking for in terms of dollars that it disperses?

[19:45]

**Hon. Mr. Harrison**: — Yes. No, I'm not really sure where that's . . . Yes. I mean, of our contribution of 5.6 we know, you know, on the aggregate. We have a board member on the Health Research Foundation, and that's David Katz, who's, like I said, he's our chief policy and science officer. He's going to be retiring very quickly here. And Danya Kordan is going to be going on to the board. I think there's a board member from Advanced Education and Health as well, right?

So I mean the board, you know, obviously have responsibility for the management of the organization. My understanding is about three-quarters of the Health Research Foundation's entire budget goes towards, directly to research grants.

And Wes maybe or Kari, you want to add additional thoughts on that?

**Mr. Jickling**: — So it's an operating grant, and it's a multi-year agreement that we have with SHRF, 5.63 million a year. And you know, we do have a representative on that board and there's, I think there's 10 or more members on that board.

I think the way that they select projects, I think it's quite a systematic and time-intensive process. It's very much geared towards the academic researcher. And so there's a call for applications; it's very administratively burdensome, I would say. A call for applications, the applications come in, are reviewed, prioritized. It goes out for peer review, and then it comes back in.

So, you know, three-quarters . . . The one-quarter of that, that's for the administration of SHRF. There is a huge component of that just goes to administering the various grant programs that they do operate.

And just by way of interest, some of the things that they're funding, some of the research that are being funded by SHRF in 2016-17, I'll just run through some of the headers here. Improving capacity to reduce fall-related injury risk in older adults, obviously falls being one of the major causes of long-term disability and even death. The number there would be, I guess the problem that we're solving, it costs the health care system in Canada $2 billion a year.

We're looking at research into tuberculosis, the aerosol or inhaled transmission of tuberculosis. Obviously, Saskatchewan has a bit of a higher tuberculosis incidence rate than other parts in Canada, or at least some parts. And so we're looking at that; SHRF is investigating that. So on and so forth: HIV [human immunodeficiency virus] research and so on, basically all focused on improved patient outcomes.

**Hon. Mr. Harrison**: — And I would just add, knowing a bit about how some of the granting programs they have, it does require a very high degree of expertise as far as picking recipients of these grants. When you're kind of into research fellowships and establishment grants and health research group grants and research connection grants and spinal cord injury research grants, I mean these things are very specialized, requiring a high degree of medical expertise in determining it.

So I mean the Health Research Foundation would be, I'm sure, happy to kind of provide a breakdown as far as how their administrative component itself breaks down and the reasons for that. You know, but as far as our contribution, we do have the board member and there is . . . Three-quarters of the overall budget at the Health Research Foundation is dedicated towards research grants. so they would be in probably a better position and, I'm sure, happy to provide information as to how their process works in detail.

**Mr. McCall**: — Thank you for that. I guess this is as good of a place as any to ask you about the reporting requirements for Innovation Saskatchewan and how a body like Innovation Saskatchewan interacts with Public Accounts, for example things like the payee list, things like the . . . even within the funds themselves. And again, IS produces a fine annual report and we're thankful for that, but in terms of that accounting of public dollars, any thoughts on how that might be improved for the public?

**Hon. Mr. Harrison**: — Right. I would say that's a good question. I mean, we do publish a detailed annual report, and as far as the organization of Innovation, you know, Innovation would be a thing characterized as a special operating agency of government. Obviously subject to estimates, what we're doing here tonight, we're a line item in the budget. The Auditor, I'm sure, has full . . . We're working with the Auditor right now on an audit, as she does with other agencies of government.

I mean, we table the annual report, of course, in the Assembly every year. So it would be the same reporting relationship as you would find with any other special operating agency in government that would be subject to the same requirements from the Provincial Auditor's office. And we would appear before Public Accounts if the committee asked for our presence, I'm sure, and obviously happy to provide any information to members through question period or any other forum as well.

**Mr. McCall**: — So you take requests? Okay. All right.

**Hon. Mr. Harrison**: — After we table the annual report, obviously.

**Mr. McCall**: — And certainly I have my copy of it, my well-thumbed copy of the annual report here in front of me. So by way of what I mean, so the Public Accounts 2015-16, page 143 — and again, this is from that budget — again, it gives you a rundown on the difference between operations and then the particular, oh, what went to SAIF, what went to ISF, what went to the IMII, and further on down the acronym bingo card. And you get the global there, but in terms of information that accompanies other operations of government, it's not as detailed.

So I guess if the Minister is taking requests, and I thank him for that, I guess see what you can do to get a more fulsome accounting of the activities of Innovation Saskatchewan into Public Accounts, for example. And then I guess the other question I'd have is, what other special operating agencies of government are there?

**Hon. Mr. Harrison**: — Well what we can undertake . . . This isn't kind of a question within our collective area of expertise as to what other SOAs [special operating agency] there are. I think STEP's [Saskatchewan Trade and Export Partnership] an SOA. WSA, Water Security Agency, is a special operating agency as well, but we can provide the list of special operating agencies within government though.

**Mr. McCall**: — Thanks for that. I don't know if there's like an annual meeting or anything like that or, you know, monthly sort of affairs or how that goes. Anyway, in terms of . . . And again, I always appreciate the time that's available in estimates and I'm cognizant of the fact that the hour that we'd requested with Innovation Saskatchewan is drawing nigh, so I guess if you'll forgive my sort of rapid-fire approach at the end here. In terms of, and this is maybe a little even flakier than the questions I've asked to date, but what's the most exciting thing you're doing at Innovation Saskatchewan? What's the big file?

**Hon. Mr. Harrison**: — Well what I'm going to do is, I have my own preferences, but I'm going to turn it over to Wes. You can . . .

**Mr. Jickling**: — Okay. So do I have another hour? Because I could . . . I think the most exciting thing that we are working on right now, I'll say two things. One is the strategic focus. We've had a little bit of a shift, I guess since my arrival in July of last year, to focus on technology start-ups, technology entrepreneurs, those people and those groups of people who are inventing a new technology or innovating a new technology and trying to build a company around it; you know, truly creating value from innovation. And so we've been very proactive engaging with companies and people who have big ideas. And I mean, for me and for the staff, that's pretty energizing. And just kind of getting a sense of how, you know, what role is there for government here. And we've got some ideas and some programs and initiatives that will be forthcoming in this year that we're pretty excited about.

The second thing is, the minister mentioned in his opening remarks about this collaborative approach to research we have in the province. If you think about Saskatchewan, you know, it's the size of Germany and Poland but with 1 million people. And we have here some world-class stuff, right. In very close proximity to where we are in Saskatoon in our office, you've got, you know, Western Canada's vet college, vet medicine college. You've got VIDO-InterVac, one of the only, probably the top world-class level 3 vaccine infectious disease research

facility. You've got the CLS, Canada's only light source.

And you start thinking about what kind of collaborations, what kind of questions, what kind of problems could we solve together here. And that's pretty exciting stuff when you get those people in a room and throwing some ideas around, and the potential is great. And so, I mean, that's one of the things we're trying to do with the research institutes is get them working together, get greater relevance to industry in society. And anyway that's what energizes us.

**Hon. Mr. Harrison**: — Yes, and if I could add to that. Wes was diplomatic. Kari just told me, you can't announce anything right now. We've been doing some really exciting work directly with technology entrepreneurs over the course of the last number of months and, you know, identified the challenges that exist. And we think we've come up with something that's really cool. And I'm not going to announce it yet, but . . .

**Mr. McCall**: — I think I saw the Chair nod in agreement that you could announce it here.

**Hon. Mr. Harrison**: — Well we're getting close to the point where we will be, but something that's really, really exciting and that we put a lot of time and effort into working on directly with the sector, which I think they're going to be pretty excited about too. But you know, as far as CLS as well, I mean, we've been working with, you know, with CFI [Canadian Foundation for Innovation] and the funding for CLS and our contribution there. I mean, we're going to be going from 14 to 21 beamlines at CLS and, I mean, there's some really, really exciting work that comes out of that.

A lot of it's kind of pure science, but there's some really cool applied science stuff that they've been doing. And Dr. Lamb, who's been running CLS for the last about two and a half years I think, you know, a real focus on how we take, use that world-class institution, definitely the national leading institution here in this country, to find ways to commercialize some of that research and turn it into, spin companies out of it. That's what we want to do and that's pretty interesting.

The work that's being done at VIDO-InterVac . . . Again, you know, we have a world-class facility in Saskatoon and it's kind of, people don't know that — and maybe that's us; maybe we should tell that story more — but it's a level 3 lab. It's actually built to level 4 classifications, so it's one of the very few in North America. I mean, you have the CDC [Centers for Disease Control and Prevention] and you have Winnipeg and you have, you know, InterVac in Saskatoon that's a level 4 containment facility. They're doing some amazing work. The Zika announcement, the fact that the, you know, world-leading research on Zika is being done in Saskatoon — that's pretty amazing.

There's some just really exciting stuff that's going to be coming forward and, you know, again kind of for relatively modest investments we are doing some amazing things here in this province.

**Mr. McCall**: — Just one last quick question. And I'm always loathe to shortchange SRC, Lord knows, but in terms of, you know . . . We had a federal budget come out. We had Minister Bains through town in terms of the federal innovation agenda. What are the sort of top three areas of alignment that you see in terms of the work of Innovation Saskatchewan and the federal innovation agenda as it's evolving?

[20:00]

**Hon. Mr. Harrison**: — Well, you know, we work closely, I work closely with Minister Bains. We were actually rookie members of parliament together way back in the day, so I've known him for some period of time and have a high opinion. You know, the feds have announced in their budget their supercluster initiative and we're not entirely sure what that's actually going to translate into but we want to work with them to see how we can maximize our share of any resources that would be available under that.

We think we have an ag-biotech sector that would classify as not just a cluster but a supercluster in Saskatoon. Venture capital, a catalyst initiative was something they had talked about as well, so we're going to be engaging on that front as well and, you know, their procurement initiative around Innovative Solutions Canada program. So we, on some of these, aren't entirely sure yet and I think they're still working through probably all of the details yet too. But we're going to make sure that we're engaged with the national government to make sure that Saskatchewan is recognized for the great work we do.

**Mr. McCall**: — Have at it. And again if you're going have a cluster, why not a supercluster? Indeed.

With that, Mr. Chair, I thank the minister and officials for this time for the consideration of these estimates.

**The Chair**: — We will briefly move on to the next committee with the SRC. We, on behalf of the committee, thank Mr. Jickling, Ms. Harvey, and Ms. Krywulak for appearing this evening. And, Minister, if you ever want to make an announcement, we will reconvene in order for you to do that if you so choose to in our committee room.

But any quick parting comments from you? I'll leave the floor to you.

**Hon. Mr. Harrison**: — No, I'd just like to thank officials for being here this evening, and thank Mr. McCall for your questions, and thank committee members for their attention.

**The Chair**: — Thank you, Minister. As I mentioned before, we will quickly move over to the SRC and do that as expeditiously as possible.

[The committee recessed for a period of time.]

**General Revenue Fund**
**Saskatchewan Research Council**
**Vote 35**

**Subvote (SR01)**

**The Chair**: — So welcome back, committee members. We are starting the second part of our examination this evening with the Saskatchewan Research Council. There are officials here.

It's 8:05, so we'll try and aim for a time to wrap up about 8:34, 8:35. Around there sometime is the agreed upon time. The minister's here, and this is vote 35, Saskatchewan Research Council, subvote (SR01). And again I'll turn it over to the minister if he has any opening statements and to introduce officials. The floor is yours.

**Hon. Mr. Harrison**: — Sure, well thanks very much, Mr. Chair, and again thank you for members of the committee. I want to introduce officials, and I think members of the committee are familiar with Dr. Laurier Schramm of course, who is the president and CEO [chief executive officer] of SRC, and Mr. Ryan Hill, who is vice-president of finance at SRC. And it is a pleasure to be here this evening.

And I think members are aware that SRC has a very long history, 70 years, one of Canada's leading providers of applied research development and demonstration. SRC adds value to the Saskatchewan economy through their responsible application of science and technology for the mining, energy, environmental, and ag-biotech sectors in the province. SRC's 2015-16 economic impact assessment shows impacts of more than $484 million in direct economic benefits to the province plus more than 4,826 jobs created or maintained in Saskatchewan. This means that for every dollar invested in SRC by the provincial government, a 22-times return is achieved.

In addition, in 2015-16 more than 22 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 of more than 21 000 tonnes of greenhouse gas emissions. These are significant achievements and they identify how SRC's positive impacts expand beyond just economics and jobs.

SRC provides services to support all aspects of the mining industry, from geoscience, exploration, extraction, processing, and tailings management through remediation. SRC helps clients in various stages of the mining cycle such as improving production rates and finding cost-effective ways to transport slurry. By helping companies prove out resource deposits to eventually mine and process, SRC is part of a mining cycle that creates and maintains jobs in Saskatchewan, across Canada, and around the world.

SRC's geoanalytical laboratories operates three of the world's largest and best geoassay 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 by providing a large suite of services that can be performed in-house, creating efficiencies by reducing shipping costs, and providing clients with convenient access to experts in one location.

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 provides 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 is 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's pipe flow technology centre is internationally acclaimed and assists the resource sector conduct commercial-scale studies for safe, cost-effective extraction and transport, processing, and tailings disposal of uranium, potash, and oil resources.

SRC provides Saskatchewan industry with solutions to assist with the environmental side of sustainable development, allowing industry to meet regulatory requirements and protect our diverse ecosystems. SRC provides services that relate to all aspects of the environment, including air, soil, and water monitoring and testing; environmental impacts measurement and modelling; industrial site remediation; and sustainable practices. SRC works with resource managers in areas such as grasslands, aspen parklands, boreal forests, subarctic woodlands, and natural vegetation to help them determine the impacts of climate change on these ecosystems and the birds and animals that inhabit them. Ultimately, SRC's work helps to prevent the decline of prairie ecosystems and facilitates adaptation to a changing environment.

SRC continues the remediation work of 37 abandoned uranium mine and mill sites in northern Saskatchewan. This project will ultimately remediate the sites with positive economic, environmental, and social impacts. SRC has been working with 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.

SRC's three-dimensional high-pressure scale physical model is used to mimic an operating heavy oil field in the lab to develop solvent-based heavy oil recovery technologies. 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 help industry by speeding up the full-scale development of cost-effective and environmentally sound processes for Saskatchewan's heavy oil reservoirs.

Through its new Centre for the Demonstration of Emissions Reductions, SRC can help the petroleum industry identify, test, verify, and deploy the global technologies that are best suited for their unique needs. As the C-DER [Centre for the Demonstration of Emissions Reductions] platform is developed and engaged by industry, it's expected to play a leading role creating environmental benefits and helping sustain primary natural resource industries in Saskatchewan by encouraging and

enabling the adoption of greenhouse gas emission reduction technologies.

SRC's new post-CHOPS [cold heavy oil production with sand] well test centre is a fee-for-service facility that provides field and pilot scale testing, monitoring, and validation of the new post-cold heavy oil production with sand, or CHOPS technology, using end-of-life but still active CHOPS wells. For industry this offers the opportunity to significantly extend the lives of their existing oil reservoirs largely using their existing well stock while increasing both production and reserves.

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 developments have experienced accelerated growth around the globe. Innovative biomass thermal conversion solutions are a cornerstone to this growth. 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 Aboriginal mentorship program, or AMP, connects Aboriginal post-secondary students in the science, technology, engineering, and math disciplines with SRC mentors in the same or similar disciplines to help students take their education and work experience to the next level. Since 2015 when it was started, AMP [Aboriginal mentorship program] has matched 11 Aboriginal post-secondary STEM [science, technology, engineering, and mathematics] students with mentors at SRC.

The work SRC does is well recognized by citizens of this province and right around the world as some of the most leading-edge and most technologically advanced work that's being done anywhere. I look forward to questions from the committee. Thank you very much.

**The Chair**: — Thank you Mr. Minister. We will in fact move along with questions quickly here. I recognize Mr. McCall.

**Mr. McCall**: — Thank you very much, Mr. Chair. Mr. Minister, Dr. Schramm, Mr. Hill, thanks for joining us here tonight for the consideration of these estimates for the Saskatchewan Research Council.

I guess in terms of the amount under consideration tonight, $21.1 million, how was that figure arrived at? And again, this against the backdrop of previous conversations we have had around the sort of funding work and the kind of leverage that is often demonstrable in the work of SRC, or as we've been discussing, with Innovation Saskatchewan.

[20:15]

**Hon. Mr. Harrison**: — Thanks for the question. The budget for this year is a 5 per cent reduction as far as the GRF [General Revenue Fund] contribution from last year, which is what the call for estimates was.

**Mr. McCall**: — So as simple as that, no sort of relation to what demand is or work on hand for SRC? It's just a 5 per cent reduction. That's it; that's what we see here.

**Hon. Mr. Harrison**: — I mean, we are going to be working to make sure that we are able to do work that's out there and, you know, we have a long history of being able to accomplish that. You know, that being said, we had a call and that's what we worked hard to meet. And I think that, you know, Laurier or Ryan could probably speak to the details of what exactly that is but, you know, we worked hard to make sure that we were on call.

**Mr. McCall**: — Well, tell me more.

**Mr. Schramm**: — Okay, so we have looked at ways to try and manage taking this reduction as part of the team without reducing critical work. So we have had to slow a few things down, but not to the point where we're losing the technological capacity, just not to be able do quite as much as we might like or as the market might have room for.

We've been striving, which we've been doing for more than a decade now, to continue to find efficiencies so that we can try and do the same or more work with less resources, including human resources. And we have redoubled our efforts, although we've been doing that for human memory, to leverage, do a better job of leveraging the provincial investment with other funds from other sources and, most particularly, industry and communities. And this has been a challenge because commodity prices are low, capital markets are a little weak.

However in our . . . This isn't the estimates you're faced with tonight, but in the budget for this new fiscal year that just started these last few weeks, we've set a target of raising contract revenues by $9 million roughly, which will mean a net increase in revenue, if we're successful, of $8 million. The contract revenue will dictate the work, so it won't, the money won't all go in all the places we would put it if we had a free choice. But we're going to be able to absorb this without making any critical cuts to services that are being requested of us. And our actual activity level is going to go up because of the expected rise in contract work this year.

**Mr. McCall**: — What sectors is SRC targeting in terms of that goal?

**Mr. Schramm**: — From a target point of view, we target all the strategic sectors important to the province, always. Where we expect the real opportunities to occur in this particular year are, one, in the environmental area. We're expecting to do a substantial increase in environmental remediation work of the sort the minister mentioned in his introductory remarks, but also an increase in the amount of air quality monitoring and assessment work that we're doing. As you'll know from news accounts over the last year, there are increasing incidences of hydrogen sulphide releases due to a variety of reasons in various places, and so we have stepped up our ability to detect, measure, and monitor on behalf of both government, industry, and community clients as needed. And that work is increasing as we speak.

So those are the big ones on the environmental side. Oh, and of course we are getting some traction with the Centre for Demonstration of Emissions Reductions that the minister mentioned. We just put the capability together this past year to be able to go to oil and gas field sites, especially the ones that are off the big gathering systems, and measure, detect, monitor greenhouse gas emissions, helping industry to assess baselines and, more importantly, to assess the practicality of new technologies that are ready to be tested and demonstrated in the field.

So those are increasing this year. That's in the environmental area. As oil prices rise, although they're rising slowly or more slowly than most people would like, we are seeing a resumption of increased demand from all parts of the oil and gas industry for more work: light oil, heavy oil, oil sands and, to some extent, natural gas. So although it's not a huge increase, that is increasing. So that's significant this year. We'll probably do close to half a million dollars more work in the oil and gas sector than we did last year, which is a start.

And in the mining and mineral area, not growth but maintenance. There is a lot of exploration activity in Saskatchewan and elsewhere around the world but, in particular in Saskatchewan, for diamonds and uranium still. And that has been strong for a couple of years now, almost historically strong. And it doesn't look like it's falling off anytime soon.

So those areas are the strongest for us right now. Most other areas, as I mentioned, we're trying our best to preserve capacity, provide what services we can, but mostly preserve capacity to live for another day. I'd say those are the big ones.

**Hon. Mr. Harrison**: — And Laurier covered it very well, and I just had asked Ryan for kind of the . . . You know, there's going to be a significant increase in expenditure, very significant increase in terms of the remediation projects in the North. You know, last year we spent about $12.7 million on the remediation. That was at Gunnar. Lorado was, we completed Lorado this year.

**Mr. Schramm**: — This last year, yes.

**Hon. Mr. Harrison**: — Yes. So Lorado is now in kind of the monitoring phase. But at Gunnar we're going to be doing the remediation of the tailings ponds this year, and it will probably be a multi-year project.

**Mr. Schramm**: — Three to four years.

**Hon. Mr. Harrison**: — Yes, three- to four-year project. So that's a capital-intensive process, so we're looking at probably just about $25 million that we're going to be spending this year on that remediation process of those tailing ponds at Gunnar. So that's a significant increase in terms of the expenditure line item in the budget.

**Mr. McCall**: — Just for the record, in terms of the remediation of the tailing ponds at Gunnar, who pays for that?

**Hon. Mr. Harrison**: — Yes, well that's a very good question. And you know, I'll be blunt about this. This has been a long-standing dispute between the Government of Saskatchewan and the Government of Canada. And I know, Mr. McCall, you would have been in cabinet when, you know, this was an issue. And I think your deputy leader was minister of the Environment at the point when, you know, we were trying to arrange the deal with Ottawa who are — in my view and the Government of Saskatchewan's view — obligated to pay for at least half. I think that would be a very reasonable proposition, and that was the understanding that we had in terms of the agreement: to pay for half of the remediation costs which are now going to be two fifty-ish. They say that their position is that they're responsible for a half share of 25 million, right. So, you know, this has been a long-standing issue across party lines and governments and different mixes of the two.

You know, I'll be blunt in saying that this is getting to the point where we're going to have to deal with this one way or the other. And you know, we're going to continue to push that case, but we think that we have other options as well. We would like to have a negotiated outcome, but we have been trying to get a negotiated outcome. The province has been trying to get a negotiated outcome for well over a decade under, as I said, both parties and different parties in power federally and all sorts of incarnations in between.

So this is a frustrating issue. And my view is very much — and this has been my position before, regardless of the party in government in Ottawa — Ottawa has an obligation here to pay for half of the remediation. The Government of Saskatchewan didn't cause the issue that we have up North. We are very much willing to play a part in fixing the issue that exists in the North, but it's not solely or the vast majority of it being our issue. So Ottawa needs to step up.

**Mr. McCall**: — So who's on point for the feds in terms of where it's at right now?

**Hon. Mr. Harrison**: — I mean, we've been dealing with Natural Resources Canada on this for a long time . . . [inaudible interjection] . . . And as Dr. Schramm just pointed out — I mean, which is very right — the Canadian Nuclear Safety Commission have been very appreciative of our efforts as a province under both parties and our willingness to step up and move this forward, despite uncertainty with respect to funding.

We've, you know, I think we've done some good work and SRC has done some great work in spearheading this, from the point of view of the Government of Saskatchewan.

**Mr. McCall**: — Are there any decision points coming up, Minister, officials, you can talk about?

**Hon. Mr. Harrison**: — You know, it's a good question and what I'll say, Mr. McCall, is that there are going to be decision points coming up in the next little while. Maybe little while isn't quite the right way of putting it, but there is going to be decision points coming up in the near future. And you know, we're going to continue to try and work with Ottawa as we have, in maybe hope and faith that they will come to the right decision. But even if it's clear that that's just not going to happen, then we are not unwilling to take further measures, so I'll put it that way.

**Mr. Schramm**: — So on the technical aspect of this, we're just

recently in the position where from the Canadian Nuclear Safety Commission, we now have all the approvals we need to see the Gunnar remediation all the way through to completion until it can be transferred to the Institutional Control program. All the hold points that were previously in place have now been satisfied and released.

So although we're at the moment focusing on the covering of the three massive tailings pond areas, as the minister mentioned, we will next, in another year, be starting the work to deal with all the demolition debris from the engineered destruction of the standing dangerous facilities and dealing with, as necessary, the mined-out pit and residual waste rock and any other remaining issues that may be on the site.

So in terms of approvals, we have from the federal side everything we need from all the federal departments, although we're still subject to regular reviews and specific permits from Sask Environment as the work proceeds. But the major hurdles from a technical and approval side are all in place.

**Hon. Mr. Harrison**: — And if I could add to that as well, I mean, you know as well there is the 35 satellite mines that are around there. We've completed remediation on seven or eight of those. We're going to continue to work on . . . I think we have about 10 more that we're working on right now.

**Mr. Schramm**: — Every year we work on a few.

**Hon. Mr. Harrison**: — Yes. So we're continuing to make progress on those satellite mines. And they vary in size and environmental impact, but it's important as well that we have those remediated also.

**Mr. McCall**: — The minister's nicely anticipated my next question, which is what is the work outstanding that is there on remediation?

**Mr. Schramm**: — So we talked about Gunnar; so there's lots of work to do, but we're well advanced. As the minister mentioned, Lorado is substantially complete. Revegetation is done; by this summer you'll see evidence of the revegetation. And we're rapidly approaching, we think, being able to transfer over to institutional control and then there'll be a role for us in ongoing monitoring, but the institutional control framework will take care of it.

And as the minister said, the satellite sites are works in progress. So typically every year we work on two or three, subject to capacity and opportunities. And they were triaged partly on technical criteria, but mostly with community engagement to make sure we were addressing the concerns of the local northern residents. So the shortest way of saying that is, the sites that were the most perceived to be and genuinely the most hazardous and the closest to human activities and human domiciles were done first. And as we move out, then we are essentially going down a triage list. So while there's still more left to be done, the most serious ones are behind us.

**Hon. Mr. Harrison**: — Yes. And if I could add as well, I mean we've really made an effort to engage the local population in terms of the remediation work. So over half of the workforce has been comprised of folks from the area. I think over, you know, well over half of the equipment has been sourced locally as well — anything we can, basically. That's what our objective is so that, you know, we're doing good work. And we're also making sure that we engage both the local residents as much as we possibly can in an area where we know that there's limited economic opportunity right now anyway. So that's something we, you know, really continue to make a point of doing.

[20:30]

And, you know, I would really encourage . . . I'm not sure if we have it up on our website or not, but seeing some of the before and after pictures of . . .

**A Member**: — Yes, we do.

**Hon. Mr. Harrison**: — We do, yes, of Lorado. It's really remarkable, you know, to go from what had been a pretty desolate sort of place — and you know, desolate maybe isn't the right word, but a site that was really, really kind of sad to see — to what we've been able to accomplish over the course of that remediation work is really quite something.

**Mr. McCall**: — Thank you for that. In terms of the air quality monitoring work that the SRC's anticipating for the year to come, could you tell us a bit more about that? And I think, for example, the sort of airshed monitoring that was done in and around the oil sands, if that work is part of what's anticipated for the year to come. And then if you could tell us a bit more about what other initiatives are there under the air quality monitoring.

**Mr. Schramm**: — I suppose the base in a sense would be, we've recently, over the past about a year and a half, been asked to assume the monitoring responsibility for all of the airshed regions in Saskatchewan. So we're now actually doing the baseline monitoring for the entire southern half of the province, which comprises all of the active airshed associations.

And then beyond that are more tactical things in response to probably needs, more than opportunities. So we are engaged throughout the entire industrialized parts of the province in industrial stack monitoring and other kinds of air compliance monitoring for industries of all kinds, but particularly industries like potash come to mind, and coal. And in the mining and mineral industry, it's the same thing — air emissions monitoring, mostly for environmental compliance and protection and stewardship. In agriculture, we do some of the same kinds of work.

Oil and gas industry, as the minister earlier in the session and when we recently were referring to work in the oil and gas sector where there were increased both occurrences and sensitivity and government movements all around the world to deal with emissions of various kinds, especially the greenhouse gas emissions. As that has increased for all those kinds of reasons, we've been doing more and more work on demand with oil and gas companies. This has morphed into work that we started doing with drones of various kinds for completely different reasons, and one thing sometimes leads to another.

A few months ago we did our very first octocopter drone live assessment and monitoring of an entire oil production site in

partnership with one of Saskatchewan's best-known names in the oil and gas industry, which was aimed at both helping them and developing and demonstrating the technology to be able to do that on behalf of the industry. So those capabilities are growing, and now that it's been shown to work, we're getting more calls for that kind of work.

And the same technology with additional sensors can be used to monitor for other kinds of things, like hydrogen sulfide gas. And we're starting to be able to do that, which is fabulous because you can look for incidences and levels of hydrogen sulfide gas that in the old days you had to send people in with samplers. And the hazard with that is if there's a high concentration of gas, those people don't survive the exercise. Drones are a great way to improve the human health and safety aspects.

So a lot of those are tactical on demand, but as you can tell from some of the examples, we're advancing technology, and as quickly as we can, deploying it to the field, finding out what works and then making it available broadly to the industry. Alberta's taking notice of this so that will help us to leverage the Saskatchewan activities. It's a small family in the oil and gas industry in the West, so there's an opportunity for us there to gain more leverage for the provincial effort by bringing some Alberta money in, if I can put it that way.

Those are my top-of-mind ones in the air monitoring and emissions. So it's all the way from watching the baselines to looking out to particularly hazardous hot spots, and then trying to help industry deal with the issues as they come up and look out for their environmental, both compliance and stewardship, needs.

**Mr. McCall**: — In that work of monitoring, any causes for concern that stand out for . . . Dr. Schramm?

**Mr. Schramm**: — Well some really bad things happen. There are incidences in both Alberta and Saskatchewan of astronomically — well from a chemist point of view, which I am — very low levels of hydrogen sulphide gas, but from a human health and safety point of view, astronomically high levels. To some extent those are increasing as our industry goes after more challenging reservoirs that are trying to book more reserves and increase efficiencies in production such as the minister mentioned in the previous session with IS.

But industry and Sask Environment and everybody else is on it and trying to deal with it, but these issues are a little scary. This is more than just economics. There's life and limb involved here. So I'm not aware of any in the sense that are not being . . . where there aren't efforts to deal with the issues though.

**Mr. McCall**: — Again, ever conscious of the all-too-scant time we have to share with the SRC and the fascinating things that are going on there, I guess I would close out with sort of, you know, what's the most interesting, exciting thing that SRC is doing this year? And I guess I'm always pretty interested to ask this of scientists because, you know, they're usually as passionate and as engaged as it comes. So what's the file?

**Mr. Schramm**: — We'll see how we compare. So I was observing, as you noticed, when you asked that question of Innovation Saskatchewan, so I can't claim surprise.

My thoughts when you asked Wes at Innovation for his top-of-mind one, to my mind naturally came to the first one we've actually talked about which is the uranium mine remediation work. It's big; it's exciting. You can see quickly — and our employees love the fact that they can see so quickly — that they're doing good and having a positive impact in so many ways, including economic. But the health and safety and environmental aspects are so unusually strong in that and it's been a joy. So that's number one, but we've already talked about it.

So my second one would be an aspect that we've touched on but not gone all the way. The minister mentioned some of the activities that have been going on including with PTRC and others. Across the petroleum landscape there's lots of exciting things going on. You've heard about some of them. The one that's really hot and exciting for us right now, it involves the emissions monitoring technologies that we just talked about, but at the heart, our attempts to get beyond the production limits of cold heavy oil production with sand . . . We've got so many wells that are nearing the end of their lifetime if that's going to be the only technology that's used, as the minister has already said, leaving an awful lot of oil behind in the reservoir, most of which isn't even booked as reserves because it's so hard to get at.

And we have our first of several for this year coming up field demonstrations with live operating wells, generously donated through the interest and courtesy of some major operators I can't identify just at the moment, and with a lot of help from the Ministry of Economy, such that we can create a situation where the operators will take the risk of putting one of their operating wells at risk so that we can try some new technologies from various technology providers, not necessarily us but others, frequently private sector suppliers, where the technology's ready for field testing, field demonstration, perhaps a little tidying up before implementation. And the very first of those is starting this week with a major household name energy company well known in the Lloydminster area that I can't identify. But if this has any success, they themselves will be letting people know about it.

But it's only the first of several. So we have several producers lined up, several different wells, several different technology providers. And that promises to be really exciting because I think the minister referred to the fact that if we can even increase recovery by a few per cent, we're looking at billions of dollars at anybody's oil price. So, hard not to get excited about that.

**Mr. McCall**: — Indeed. And I can't believe you weren't on the octocopter drone project as possibly a third in the list.

**Mr. Schramm**: — There's a payload capacity issue there.

**Mr. McCall**: — We've come to that time in the proceedings when I'd say thank you very much, Dr. Schramm, Mr. Hill, Minister, and our compliments to the good folks at SRC and all the great work they do.

**The Chair**: — I'll say it on behalf of the committee, thank you

to Mr. Hill and Mr. Schramm and of course the minister for appearing before the committee tonight to consider these estimates. We've come to the end of our allotted time. It is 8:40 pm and I will now ask for a member for a motion of adjournment. I see Ms. Carr is anxious to move that. Is that agreed by the committee?

**Some Hon. Members**: — Agreed.

**The Chair**: — That's agreed. It's carried. So this committee will now stand adjourned to the call of the Chair. Thank you all.

[The committee adjourned at 20:40.]