



The Assembly of First Nations

NATIONAL ASSET MANAGEMENT VIRTUAL
CONFERENCE:

Pathways To Sustainability

March 8-10, 2022

DRAFT REPORT

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EXECUTIVE SUMMARY

The Assembly of First Nations (AFN) National Asset Management Conference: *Pathways to Sustainability* took place on March 8-10, 2022. The conference included discussion and updates on progress by First Nations on work related to Asset Management Planning (AMP) approach; sharing of success AMP stories; networking and information sharing; and ongoing challenges with Operations and Maintenance. The Conference provided a forum for networking for First Nations, First Nation organizations, and industry partners on current and innovative practices.

There were 201 registered participants including: 6 Chiefs; 86 First Nations organizations or individuals; 45 observers; 18 Government officials; 7 non-government organization representatives; 3 academia; 16 private; 16 staff; and, 4 students. It included opening ceremonies, welcoming remarks from AFN representatives, a timely panel on asset management and climate change impacts, as well a number of other plenary presentations and workshops.

The first day of the conference including the opening ceremonies along with an address by National Chief RoseAnne Archibald and Regional Chiefs Cindy Woodhouse (MB) and Regional Chief Glen Hare (ON), both representatives on the AFN Chiefs Committee on Housing and Infrastructure. Mr. Vince Badawey, Parliamentary Secretary to the Minister of Indigenous Services Canada, provided some opening remarks acknowledging the infrastructure gaps that existed and reiterated that the government was working with them to close those gaps. Mr. Irving Leblanc, Director of Infrastructure for AFN, provided some context stating that, despite the inadequacy of the current infrastructure funding, there were success stories that they could learn from in terms of the asset management approach and they would hear some of those here at this conference. There was a panel presentation on Asset Management and Climate Change Impacts. The final presentation of the day was on asset management training providing an opportunity to learn about the Assembly of First Nations' recent development of asset management awareness, capacity-building, and training materials and the Train-the-Trainers Pilot project. In addition, there were three workshops offered during the first workshop period of the conference.

The second day of the conference was series of plenary presentations including: the National First Nations Needs Study; an Examination of Regional Comparability in Operations and Maintenance (O&M) Level of Service Standards to Advance Self-Determination; the First Nations Infrastructure Resilience Toolkit (FN-IRT); and a presentation on Data Gathering.

The final day of the conference included a presentation from Indigenous Services Canada Initiatives as well as two more workshop periods. A total of eight workshops were offered throughout the conference on topics ranging from community-based asset management projects to education infrastructure to housing.

SUMMARY OF OPENING REMARKS

Ceremonial Opening

The conference chair, Mathieu Courchene, welcomed the participants to the Assembly of First Nations Asset Management Conference. After a welcome song by the drum Spirit Wolf, he introduced Knowledge Keeper Charles Hume, who provided an opening prayer. Mr. Courchene then welcomed Chief Dylan Whiteduck, Kitigan Zibi Anishinabeg, who provided welcoming remarks to his territory.

Address by National Chief RoseAnne Archibald

National Chief Archibald began her remarks in her own language. She acknowledged the Creator, the world around them and their place within it. She said that she was coming in from the unceded, unsurrendered traditional territory of Tsleil-Waututh, Musqueam, and Squamish Nations and she acknowledged them all on their traditional territories. She thanked Spirit Wolf for the opening song and Knowledge Keeper Charles Hume for opening the conference in a good way with a prayer.

She acknowledged Chief Dylan Whiteduck for his opening words. She also mentioned that she wanted to acknowledge the work that Regional Chief Cindy Woodhouse had done as AFN Housing and Infrastructure Portfolio Holder and Chair of the Chiefs Committee on Housing and Infrastructure. Also, Regional Chief Glen Hare who was the Water Lead on the Chiefs Committee on Housing and Infrastructure.

She welcomed them all to the AFN's first National Asset Management Conference. The theme for this year's event was Pathways to Sustainability. She said that as their world moved toward more green initiatives -- and First Nations led the way in efforts to manage climate change -- they were working toward sustainable building practices as they strengthened First Nations critical infrastructure.

In order to accomplish this, AFN was advocating for the funding needed to upgrade existing facilities. They were using sustainable building practices as they designed, developed and constructed their communities to reconnect to the lands and waters the Creator had gifted to them and their children. First Nations Asset Management was a field of work that required much more focus, attention, and support. The contributions of their infrastructure and housing sectors have created a path for them to better negotiate with the Government of Canada as they formulate their federal budgets.

As First Nations, they always considered the immediate effects that climate change had on their Nations. Each year, their lands and waters were experiencing the effects of more extreme weather events like wildfires, floods, high winds, and droughts. With these environmental challenges, they must build climate resiliency into their infrastructure to better protect assets, but most importantly, to protect their people. At this conference, she said that they would hear success stories from First Nations experts in asset management. Their stewardship and early involvement in this field would help create a pathway forward as they learned to manage their own core infrastructure.

They continued to advocate on behalf of First Nations with their federal partners and press them to act on the commitments they have made to invest in First Nations community infrastructure, housing, and water and wastewater facilities. As National Chief, she said, she would continue to work with the AFN portfolio holders, members of the infrastructure sector, and their federal partners at Indigenous Services Canada, to address the rising costs of construction that had impeded their shovel-ready projects.

As many were aware, investment and promotion of First Nations infrastructure initiatives were key pillars of her 100 Day Plan. As the Provinces open and the Canadian economy rebounded, she will work with their Regional Chiefs to focus on First Nation Post-Pandemic Recovery Plans to ensure their People were included in the federal stimulus monies needed for them to put the economic effects of COVID-19 behind them. Meegwetch for joining them for this Conference and she looked forward to witnessing progress over the coming days. Ninanaskamon!

Regional Chief Cindy Woodhouse (MB), AFN Housing and Infrastructure Portfolio Holder and Chair of the Chiefs Committee on Housing and Infrastructure (CCoHI)

Regional Chief Woodhouse wished everyone Happy International Women's Day and she stated that she was coming to them from the unceded, unsundered traditional territory of Tsleil-Waututh, Musqueam, and Squamish Nations. In her role as portfolio holder for housing, infrastructure, water and emergency services, she serves to advocate for better services/infrastructure. She thanked them for joining them for the first National Asset Management Conference. They wanted to promote the wellbeing of their people and the maintenance of their lands while meeting their infrastructure needs. A formal asset management process was a new thing for them but the idea behind asset management was not new for their people. Their ancestors adapted to the land and the seasons and they knew how to care for the water, how to prepare and care for the animals in order to survive the seasons and flourish year after year. To address the theme of the pathways to sustainability, she said that they needed to protect their people and their infrastructure and part of that work was to advocate for more infrastructure capital and maintenance funding. They needed to advocate to close that infrastructure gap that they experienced in all regions.

Regional Chief Glen Hare (ON), AFN Chiefs Committee on Housing and Infrastructure, Water Lead

Regional Chief Hare thanked them all for attending this conference and recognized that he was on the traditional territory of many people in Toronto. He thanked Knowledge Keeper Hume for his opening and acknowledged the Chiefs and everyone who were in attendance. He also thanked the National Chief for her address. He spoke about the importance of bringing clean water to the communities and recognized that the last few years have been difficult with the pandemic, wildfires, the loss of lives in house fires and other challenges. He said that he hoped for a brighter future; through the AFN's advocacy work the federal government was moving in the right direction to address infrastructure needs. It was important to maintain that momentum; their communities needed proper infrastructure and they needed to learn how to best manage these assets. They need to begin training their men and women so they could manage their lands and assets, as their communities were relying on them. He mentioned the deterioration of their water lines as the infrastructure aged so they had to be prepared for this in future. In municipalities, the pipes and systems were upgraded regularly but the First Nations were held back by inadequate funding; there was a large gap there that had to be addressed. As water lead, he welcomed the federal decision of \$8B for safe drinking water and they needed to make sure they had the assets in place to meet the needs. The provision of water had far reaching effect including address fire safety and housing conditions among others. In terms of fire safety, they need to be able to fight house fires like anywhere in Canada so there was a need to bring their systems up to national standards.

He thanked all the engineers and consultants who work with asset management in the communities with the First Nations and he thanked them all for attending this conference. He said miigwetch to all their front-line workers; they needed them more than ever.

Mr. Vance Badawey, Parliamentary Secretary to the Minister of Indigenous Services Canada

Mr. Badawey thanked them for the invitation and brought greeting on behalf of Minister Patty Hajdu. He completed his land acknowledgement. He introduced himself and his background. He said in his previous position as a mayor, he knew the importance of having this venue to discuss their community infrastructure needs. It was important their voices were heard here as the planning was taking place for sustainable investments into the future. Asset management plans were important as it meant that the community set infrastructure goals, whether that was new builds or the maintenance of current infrastructure. When they had an asset, it was important to prepare for the life cycle of that asset and identify when it would need to be replaced. He noted their theme for the conference, *Pathways to Sustainability*, and noted that they would have to take a multipronged approach to be sustainable.

He mentioned the infrastructure gaps and the government was working with them to close those gaps. He said, in terms of sustainability, it was important to be better prepared for future building needs and maintenance demands. This could be addressed by increasing capacity. ISC was working in co-development with First Nations which would lead to stronger, more sustainable communities with better social, economic outcomes. They had begun these projects in 194 First Nation communities; 46 had developed their own asset management plans and 21 of those had adopted and implemented their plans.

Mr. Badawey also provided an overview of ISC's Indigenous Infrastructure Fund which started in 2021; this was a \$4.5B investment which was starting in 2021-22. This fund supported First Nations water, school facilities and housing among others. He mentioned that Minister Patti Hajdu had spoken at the AFN Water Forum in February outlining some progress they had made over the past 6 years. They also heard some of their concerns/needs around O&M and other issues. There was a lot more work to do and the department was committed to that. They knew that there were needs around housing and energy systems, fire prevention and urban Indigenous infrastructure. He said that they were supportive of pathways to self-determination for communities and wanted to transfer service delivery to them; it would be an opportunity for the First Nation to take a wholistic community-based approach while building partnerships. He mentioned that the First Nation Capital and Infrastructure Agenda of Saskatchewan and the Atlantic First Nations Water Authority as examples of this.

Questions and Answers

Mr. Badawey was asked what considerations were being factored in with the upcoming Budget in terms of asset management for First Nations. He responded that they had a lot of dialogue within his office, the department and the Indigenous caucus of the Liberal party and others to discuss those priorities. Obviously, infrastructure was the largest ask and he was looking forward to sitting down with them face-to-face to discuss this on an ongoing basis to ensure that their priorities were front and centre. He talked about the importance of their needs including water and wastewater, health care and mental health. He said that they were discussing all of these priorities but he could not guarantee that all of the ask would make it into the Budget.

In terms of closing the gap by 2030, he was asked specifically about fire prevention, broadband connectivity and health care infrastructure among others. Mr. Badawey said that it was great question and when he took on this file, being an Indigenous person himself, he knew he would have to follow the priorities as identified by the communities. He said that community identified those priorities in the form of those community strategic plans/action plans. It was then a matter of executing those plans and that

was where the department came in to identify the funds to get that done. He said that this was where it needed to be sustainable with a solid asset management plan that made the best use of the asset. They realized that so many years down the road, this asset would have to be replaced.

He was asked if they could expect the relationship that ISC and Infrastructure Canada had with First Nations would change in the future. The response was that they were trying to align that way; one of their goals when the party was elected in 2015 was to improve those interdepartmental relations. This related to his answer about getting those priorities funded and working together to do that. Communicating their priorities was essential and then it was his job to ensure that their voices were being heard by the Ministers. They first had to have their strategic plans and priorities in place; plans for now and in the future in a sustainable way.

It was noted that as First Nations set their asset management plans, they would need additional supports for the full costs of the O&M. If this was set, the First Nation would be in a much better plan going into the future in a sustainable way. Mr. Badawey said that was what it boiled down to, which was sustainability to ensure the asset was looked after now and into the future and ensuring the funding was in place to support that asset. They needed to be as specific as possible what kind of funding would be needed for this now and in the future; they could all properly budget now and years from now. He said that this could be done through debt financing and having the ability to accelerate capital projects.

He was asked to elaborate on the funding for infrastructure he mentioned earlier and how it will be distributed considering the needs at the community level. Mr. Badawey said that in terms of prioritizing, that would be up to the First Nations to decide; they saw their communities every day and were in the best position to decide what was needed. The next step would be considering how those asset would be sustainable through the lifecycle and eventually replacement. He spoke to the importance of the different types of needs at the community level and recognizing the importance of youth centres and community centre in the life of the community.

Mr. Irving Leblanc, P.Eng., Director of Infrastructure, Assembly of First Nations

Mr. Leblanc began his remarks stating the importance of women taking roles in the field of water; as water operators, construction crews, higher level of government. They should be encouraged to take those opportunities. He provided an overview of the work of the Assembly of First Nations stating that it was First Nation leaders across Canada that provided the AFN with their mandate. Part of their work was the facilitation of national and regional discussions as well as advocacy work. An important role was facilitating communication and relationship between First Nations and the Crown. With regards to asset management plans, they were directed by AFN resolution #80-2017. There was a lot of work to be done such as addressing the O&M and funding issues including the outcomes of the asset management plans currently be developed by the First Nations. One of his questions, he said, was when would First Nations get the full costing, the amount of resources needed to maintain and protect their assets; these things that the government often calls their investment. When they met at First Nation experts on asset management from the communities, they unanimously agreed that Canada needed to consider the full cost of maintaining these assets. In order to protect the investment (the asset), they had to have the full funding. This had been the foundation of their work, advocating for an increase in funding for O&M and they were able to make some gains. They were making some headway and they were thankful for that; but it was still not enough.

He said that there were a lot of success stories that they could learn from in terms of the asset management approach and they would hear some of those here at this conference. Despite the inadequacy of the funding, First Nations were adopting some best practices when it came to asset management. It was a steep learning curve for First Nations and some were just starting out in the asset management process. It was important for those who were farther ahead in the process sharing that information with those starting out in conferences such as this. He provided an overview of the other work they were undertaking in support of regional technicians and federal partners such as the review of the ISC tendering process, updating the fire protection strategy, updating the water protocols and policies among other activities linked to asset management. He said that they could not do it alone, they needed the support of ISC to continue the work. The asset management approach was a whole of community approach. In conclusion, he said that they looked forward to more of these sessions as they moved forward.

SUMMARY OF PLENARY PRESENTATIONS

Panel on Asset Management and Climate Change Impacts

Chief R. Donald Maracle, Mohawks of the Bay of Quinte

Chief Maracle paid tribute to the Indigenous women in their communities; he also provided some information of where they were located near the town of Napanee, Ontario. He said that they had 76 kilometres of gravel roads in his community, 1200 homes and 200 businesses and they were using a combination of pipe water, ground water wells and trucked water. They also had communal wastewater, wastewater treatment or septic. They had a water plant which was finished in 2016 and a distribution system that was finalized in 2020; this eliminated the long-term water advisory in his community. His community was heavily impacted by climate change as seen in flooding in both 2017 and 2019. He provided an overview of what had happened in those two instances. He also mentioned that due to the shallowness of the Bay of Quinte, it was prone to blue green algae blooms, which they monitored as a joint regional committee.

In addition to the floods, the community had experience level 2 and level 3 droughts impacting the ground supplies in the region with a historic drought (level 3) in 2016. He noted they had conducted a ground water well survey and found that the ground water was directly influenced by the surface water, which was challenging to treat. With the drought in 2018-2020, it was level 2 and there was systemic low water conditions. They had water delivered locally but, due to the need, they could not keep up and the residents were left without water delivery for up to three weeks. This lack of safe drinking water jeopardized the health, safety, security and well-being of the community.

They undertook a number of processes to deal with this including looking at the asset vulnerability and the community adaptation plan, which identified climate change risks. They were able to prioritize the risks using a risk assessment and cost those out. This process to understand the current risks and impacts was important. They had a number of shore wells and flooding caused by shoreline erosion and there was significant impact to property, holding tanks and septic systems as well as roads. There were higher costs related to maintenance as part of the impact including repairs to the seawall, reconstruction of the beach road and bridge repairs. This was funded through the ISC emergency measures. The climate change impacts included changes to flora and fauna of the wetlands. There were delays in putting in new

waterlines in one of the two communities and they were approved for funding through the disaster mitigation adaptation fund.

This was why it was important to continue to lobby ISC to provide funding to mitigate these impacts of climate change; these presented huge challenges to the First Nations. He concluded stating that this was the critical nature identifying proper funding for O&M and asset management; they needed to enhance the resilience of their assets.

Warren Brown, Lytton First Nation

Mr. Brown thanked them for the invitation to speak on this panel and stated that he was there to discuss the climate issues that they have faced in their community over the last year. He said that they had a devastating fire that came in to Lytton on June 30, 2021. Two of their occupied reserves had been wiped out and part of a third one. Initially the fire was worked on by the British Columbia wildfire service and Lytton First Nation and the Town of Lytton helped as much as they could. He said that they lost communication within a half hour from the fire starting and lost all power. They had a challenging time to do their work without power and communications. One benefit of the current system was that two of the seven water systems had remote monitoring capabilities and they were able to check on the phones what the situation was. They were able to see that these two systems were still operational. They had wireless technology for their communications and that was useful that day.

There were challenges with emergency services because of all that was going on in the province and they spent the next few weeks making sure their people had safe places to stay. It was great to see the outpouring of support from other communities and provinces; the public was very generous. In Lytton First Nation, they lost 40 structures (houses and community buildings). Once their citizens were safe, they started community planning around how to get people's back into new homes in their community.

The second issue they had was the flood of November 15, 2021, because of heavy rains which washed out some culverts and isolating the community's water systems and the seven homes it served. The flood also washed out two intakes of another two homes, which isolated them. They had an emergency operations committee and they organized their response. Each site was assessed for immediate needs and flood control activities were undertaken. They got help from partners on this such as CN Rail. They addressed the equipment needs that had to be replaced. While they were completing these repairs, they also had to deal with very high snow levels and had to resort to heavy equipment to get through. The First Nation and the Town of Lytton worked together to address the issues.

In terms of lessons learned, Mr. Brown said, they had to be more prepared to deal with climate issues in the future and stated that they needed to improve their fire smart program. They saw the importance of conserving water for emergency uses and also to be prepare to address mental health issues of their citizens.

Diana Norgaard, Coldwater First Nation

Ms. Norgaard introduced herself and mentioned that she had been working for Coldwater First Nation since February 2021; the community was in the midst of a COVID-19 lockdown at that time. She said that she located the community's emergency plan and found it was out of date. They began to update that plan and then the heat dome hit them for 12 days in June 2021 with daytime temperatures in the mid-40s. They brought in fans for their Elders and opened cooling stations. They were concerned about the

possibility of forest fires and this happened in July 2021, when a lightning struck. This fire joined an existing fire and resources to fight it were scarce because of all that was happening. She said that they lost over 19K hectares of land with nothing left but metres of white ash. This caused the destabilizing of the slopes and the temperatures in the early winter were unseasonably warm.

The Coldwater River flooded and the course of the water had changed. They lose their fishery in four years but at least they did not lose any lives or homes; two homes became inhabitable, as they were badly damaged. They lose 66 hectares of land; those were field and grazing lands. She said that their brothers and sisters downstream had lost so much more. They also lost a lot of wild game. The fentanyl overdoses skyrocketed and the general mental wellbeing of the community members suffered. They learned that they were woefully unprepared for emergencies; Emergency Management British Columbia (EMBC) and Wildfire British Columbia were also unprepared. For example, the province have since made this a year-round service when before it was only seasonal.

In terms of EMBC, they did not understand the realities of living in a small rural reserve. She said that she needed gas cards for people to facilitate them leaving the community and fortunately ISC provided those. They had to have those on hand in case they needed to citizens to evacuate quickly. They also needed to get supplies and medication to their community and the nearest source was Merritt, which was also evacuated. Also, in terms of donation, they tried to direct the donations to other communities more in need and the donors became aggressive. Communication was difficult during both the fire and the flooding, even though they had daily coordination calls. She felt that the issues of the First Nation were not addressed unless they “pounded on the tables” first. There were also issues working to address the fishery situation.

She said that if she could tell them about the most important lesson learned, it would be that they needed to be prepared; they had thought they were but they were not.

David Diabo, Assembly of First Nations

Mr. Diabo provided an AFN update on the emergency services adaptation. He began by provided on overview of advocacy work of the AFN, which was undertaken by the direction of the Chiefs in Assembly. He provided an overview of the four pillars of emergency management and added that climate change had a huge impact on their communities dealt with emergency management.

The big three when it came of emergencies were flooding, wildfires and critical infrastructure damage. On average, people living on First Nations reserves in Canada were 18 times more likely to be evacuated as a result of disasters such as wildfires, floods and severe storms, compared to non-First Nations municipalities. Indigenous communities, 80 per cent of which were in forested areas were particularly vulnerable to the wildfires, which burn on average 2.3 million hectares of land per year across Canada. Flooding and wildfires affected First Nations due to vulnerabilities such as remote and isolated locations, lack of capacity, training, equipment, and funding.

With climate change, they saw more extreme examples of these flooding including the reactivation of past flood pains, increased coastal flooding and flooding of large lakes, windstorms causing the devastating loss of life and property. In term of wildfires, it was encroaching more on developed areas causing loss of property and also critical infrastructure such as what happened in Fort McMurray. Damage to critical infrastructure could effectively shut down a whole city; this could mean standalone system or interconnected systems. An example of this would be the ice storm of 1998 causing loss of electrical lines

and structural assets. The impact of climate change could be seen in all these emergencies, directly and indirectly. They could not use established and now outdated methodologies to deal with emergencies that have grown exponentially because of climate change.

Climate change had a strong effect in their isolated First Nation communities where there was a lack of services as well as capacity. This affected approximately 114 First Nations in Canada and they needed to work to protect these communities, as the hazards were extensive. For example, during the pandemic, the communities still had to contend with their usual seasonal hazards. This was made further challenging by inadequate amounts of core funding, which meant they had to spend additional time applying for funding to deal with emergencies as they arose.

Mr. Diabo said, in conclusion, adaptation equaled resilience which equaled sustainability. They needed to be prepared to grow and adapt to address the future issues of climate change.

Questions and Answers

Chief Maracle was asked if the process was streamlined or could it be simplified, when dealing with emergency situation on the reserve. Chief Maracle noted that they faced uncertainty when they should declare a state of emergency; they decided when their ambulances could not use the flooded roads was the time to do that. This meant access to fund as well as regular constant communication with ISC but, he said, they had to use their own resources at the beginning to make the road passable. He said that they had a number of issues with fire protection in homes, costs of repairs to damaged roads, flooded homes needed to be replaced and the community access to drinking water. They needed help in the initial stages but they had to use their own resources for this at first. It was important for community's to have a "rainy day fund" for these initial expenses. There were some basic logistical issues as well they needed to be prepared for such as people needing to shower somewhere and those facilities needed to be continually cleaned and sanitized. Issues around water were far reaching and broad.

Mr. Brown was asked what fire equipment or resources could he have used that day. He responded that he did not think they could have done better with more on that day with the strong winds and heat of the day. He did not think the best firemen could have put that fire out. They have since improved their trucks and their own fire crew would be running year-round now, rather than just during the fire season. They were also looking at fire prevention activities off season.

Mr. Diabo was asked what the AFN was doing in terms of advocacy to increase the funding to address emergencies in First Nation communities. The participant noted that, as the panelists all mentioned, the impacts of climate change would increase in the future. Mr. Diabo said that they regularly met with the Emergency Management directorate at ISC to monitor events that were happening and climate change was always a topic of discussion. The AFN reiterated to ISC that the currently funding models were inadequate, even before considering climate change. The lack of adequate funding was a constant issue.

Questions were raised around how much funding should a First Nation set aside for emergency management planning and how would addressing climate change impacts be built into the asset management plan. Chief Maracle noted that in terms of costs for emergency management, it would be hard to estimate without tendering out the work and sometimes the costs were very high. He noted that costs of everything during the pandemic was high and gave the cost of gas and building materials as examples. He suggested that they needed to build a cash reserve with millions of dollars to deal with climate emergencies; maybe surpluses could be housed in an emergency management account. The asset

management plan needed to consider what they needed to get the community functioning again - water lines and/or delivery for safe drinking water, housing, road repairs, bridge rebuilds, sewage systems, etc. Depending on where they lived, they needed to take in account temperatures and conditions. They needed to look at it from the perspective the individual community and the funding needed to be flexible to accommodate what needed to be done there, specifically.

Mr. Brown noted that they were looking at a number of factors in terms of fire prevention within the community including steel roofs/tiles, better siding, less shrubs around the yards and keeping firewood stockpiles away from the houses. They had to encourage people to maintain their yards, keep the grass down and keep anything flammable away from the house. Future builds need to ensure good fire resiliency.

Mr. Diabo added that, in terms of climate change in general, the raising of the temperature a few degrees, as was happening, had an enormous effect on the planet. Climate change had planetary effect and First Nations were also adversely affected by these impacts. In First Nations communities, they were looking at assessing the effects of climate change and providing this information to ISC in preparation for future events/needs. The project generally address very immediate needs to deal with the biggest impacts. Chief Maracle added that sometime, in the cases of climate change effects such as fires, the insurance was voided; communities were not equipped to deal with these catastrophic losses.

Asset Management (AM) Training Programs Presentation

Presenter(s): Ms. Jody Rechenmacher, P.Eng. and Ms. Christina Hopkins, P.Eng., Urban Systems and Mr. Kevin Woods, P.Eng., North Shore Mi'kmaq District Council

Mr. Irving Leblanc provided some information for this presentation as well as the presenters as listed. Mr. Leblanc began the presentation stating that asset management was needed in First Nations, as it supported long-term planning, rather than a year at a time. People needed to understand AM, what it was and was not and why it was important before they would put effort towards it. They needed to shift their thinking and it started with training and awareness-building. Training would not create an AM Plan for a First Nation, but it would build the AM mindset into more staff and leadership. He explained that the question around funding was a real one for First Nation communities and the status quo was not working; this funded issue needed to be dealt with. However, he explained, asset management practices could be adopted within current realities, even if funds were not readily available.

Ms. Rechenmacher continued mentioning that the AM planning could help maximize the resources they did have, articulate the gap and the need, from a community perspective and, facilitate long term planning for infrastructure O&M and replacement. She added that AM needed a team; it was not up to one person. Training could be directed across the organization and the best outcomes were achieved when the team trained together. She said that training needed trainers; the materials needed the support of qualified trainers. The project that AFN undertook was developing training materials with input from regional technicians and building the training the trainers component. The AFN hired Urban Systems to help with this.

They agreed that training should be engaging, relevant, practical, comprehensive, memorable, adaptable and a good use of time and effort. During pandemic times, it needed to come across well for trainees in a zoom format but also could be used for in-person training, when they went back to that. For it to be considered successful for trainers, they would need: to engaged and enjoy the training in order to keep

motivated; able to navigate the materials and use in a local context; develop some confidence in their own ability as trainers; and, build a network of other trainers to share ideas and support each other. Mr. Leblanc added that they had a Chief undergo the training; it was a good experience for him and he spoke highly of it. The training was good for staff but also leadership.

Success for participants meant that they were engaged and motivated to implement asset management and they gained asset management language, skills and knowledge. The training would see the emergence of an asset management team with a common understanding of what asset management was, its' benefits and how to take the first step. It was a shift in thinking away from what was ISC funded to what did the community need and a shift from short-term thinking to long.

For the First Nation, Ms. Rechenmacher explained, success meant a number of benefits: they worked together (silos were broken down); there was better value for their dollar as they collaborated in the community; individuals built their own knowledge skills and system to quantify and effectively communicate the infrastructure gap; and, they were able to identify opportunities to apply principles and best practices in infrastructure management with existing resources. Without the awareness of these benefits, the community ran the risk of the AM plans just sitting on a shelf somewhere. Mr. Leblanc noted that this last point was particularly important; everyone needed this grounding and understanding prior to getting in the work of developing their AM plan. There were many resources out there but these resources were not tailored to the First Nation situation or trainers who did not have lived experience in the First Nation. Successful training would feel relevant and important in the First Nation context.

In terms of the training and the materials, there were two courses – Asset Management for Chief and Council (three 2.5-hour sessions) and Asset Management for Staff (five half-day sessions). She noted that trainers had a lot of flexibility and were able to break this down in a format that worked for the individual in training. To support the trainer, there was an Asset Management Training Guide with slides and speaking notes for the trainer and workbooks as well as tools and templates for the trainees. There was also a guide for First Nations and an information pamphlet. It was really important to tailor the training with local context. The materials were developed with input from a network of regional technicians and they held a few sessions with them. They were able to adapt the training based on what they learned in these pilot sessions.

In the Asset Management for Chief and Council course, participant would learn the benefits of asset management; how asset management supported a First Nation in achieving their broader goals; the role of Chief and Council in asset management, adopting an “asset management mindset” in decision making; asset management policy; and, setting the First Nation up for success in asset management. The training for staff went into more detail and it was expected that they would learn: how to communicate the benefits of asset management with others; roles and responsibilities; delivering service and managing risk; data collection and management/financial planning; developing an asset management plan; planning next steps; and, working with tools and templates. She spoke to the importance of context, local perspectives and not taking a “cookie cutter” approach, as emphasized by the regional technicians. Mr. Wood noted that it was important to reiterate that the more people in the First Nation that could take the training, the better it would be for the First Nation; those different perspectives were key. The presenter provided an overview of the training materials available.

In terms of training the trainers, the AFN had assembled a group of willing participants to become trainers and they worked through all the materials; they were able to critique the materials at the same time from

a participant's perspective. The trainees included representatives from Tribal Councils or regional technical support groups who wanted to become asset management trainers. There was a varied level of experience with asset management within the group. The English training took place September-October 2021 and the French was underway. All sessions had been held by zoom.

Participants were interested in the learning the following: the content covered in the training programs; how to navigate the training materials; how to facilitate exercises and practice doing so; tactics for tailoring the course to the local context; tips for facilitating on zoom; "behind the curtain" sharing of facilitation needs. She provided an overview of how their goals for the training development were met.

Mr. Woods shared some of his experiences as a trainer. He mentioned that he was thankful to the AFN for giving him the opportunity to take this training. He said that the materials that had been put together was comprehensive and easy to navigate; it was great process to undergo and now to out and share this information with his member communities. The zoom format had made it easy to connect with people across the country who have shared different perspectives and approaches. He felt that this added to the value of the training.

He mentioned that he felt the material was comprehensive – the workbooks, slides and speaking notes were useful and fit well together. Capacity development was a priority for his tribal council and this training support that priority for them. The materials was more relatable than similar non-First Nation training packages. He mentioned that the training course/materials for the Chief and Council was particularly important, as they needed leadership support as well; it was not only an administrative process. The whole team approach was seen as critical. For them, the next steps was sharing this information with their member communities; they were in the planning phase to get this training done.

Mr. Leblanc said that the plan was to provide access of the materials in French and English to the First Nations. They would also be supporting First Nations and technical organizations in taking these materials out in creative ways that made sense to them. They were looking forward to implementing the training on the larger scale but there were limited resources.

Questions and Answers

A participant noted that asset management needed a team, Mr. Woods was asked what this ideal team structure would look like when looking at a larger First Nation or a Tribal Council. Mr. Woods noted that he felt it was important to understand that there was no limit on who could be involved in asset management. One of the keys was different perspectives feeding into community asset management. One of the important elements of the team was Finance; they brought a strategic view on the future of infrastructure renewal. Another was Operations and Maintenance, they knew the vulnerabilities of the systems. Leadership was another element as well as capital directors (housing). They also involved their water and wastewater teams and emergency management. Ms. Hopkins noted that in the materials they did not name the team members but left this up the community, as each First Nation was different.

There was a question raised around if the materials were updated based on what they learned in the sessions that had taken place. Mr. Leblanc noted that they had done some of that but they were leaving it up to the First Nation to learn the materials and tailor it in a way that worked for them. The principles were the same and the First Nation could adapt it to their own reality.

A question was raised around if funding was available for smaller First Nations to participate and take this training. Mr. Leblanc noted that they were considering how to move the training forward to a broader deployment; at this point, they were looking at the tribal council or regional organization level. They needed to discuss with ISC the idea of funding in order to expand it.

It was noted that the argument could be made that taking the training was a money saved in the future; an investment in the future of the First Nation. Mr. Leblanc stated that this was what he was stating; it was a win-win for both the First Nations and the federal government. If the First Nation could develop ways to operate and maintain their asset and do that necessary long-term planning, their assets would not need to be replaced prematurely. Ms. Rechenmacher noted that underfunding ironically caused life cycle costs. Ms. Hopkins added that what the people were learning in the training would end up saving them costs in the long run.

The presenters were asked if there were any plans for certification of the training in the longer term. Mr. Leblanc noted that this was a big part of the equation and if the First Nation wanted to look at this, they would need to put an AM coordinator into place. They had a request for proposals out there now based on information gathered at their O&M engagements a few years ago.

A pilot project had been mentioned in the presentation and they were asked how a Tribal Council could get involved in that. Mr. Leblanc noted that it was the RFP process as mentioned and they could apply online. It was noted that this was not an AFN process but rather a federal program in its 3rd year of a 5-year program.

National First Nations Asset Needs Study

Presenters: Owen James and Craig MacDonald, Associated Engineering

Mr. James introduced himself and began the presentation. He stated the National First Nations Asset Needs Study was recently completed and the final report would be published in the near future. This presentation would cover, among other things, the limitations of the study, the findings, investment needs and methodology used. A reporting template had been provided for First Nations use. The objectives of the study were to determine required investment for safe, sustainable and effective operation of First Nations assets. It would provide data-based evidence of the funding gap and the next stage of O&M policy development. It also defined the 20-year investment need across all 634 First Nations' asset renewal, upgrades, expansion and new build. The project capitalized on previous developed O&M policy, pilot asset management plans and studies.

He noted that the study did not include every asset required to support a community, nor did it assume the appropriateness of a current level of service. Climate change impact on infrastructure was not accounted for due to absence of location data. Data had come from ISC's Integrated Capital Management System; there were some asset classes that appeared to be underrepresented. This might be due to different methodology in First Nations' use of the system. Assets involved were buildings (i.e., fire hall, community centre, works yard); grounds and transportation (i.e., ports/wharves; roads and bridges, dikes); utilities (i.e., water/wastewater, electrical); and vehicles (i.e., fire trucks, garbage trucks, water delivery trucks).

In 2022, the asset portfolio value was \$45.8 billion, with utilities and buildings being the larger (\$35.3 billion) portion. Transportation, vehicles and grounds made up the balance. The 20-year investment

needed forecast estimates approximately \$73 billion in investment to account for O&M, meeting new regulatory requirements, population growth and sustaining existing assets (i.e., roof repairs, refurbishment, end of life renewal). The forecast does not allow for level of service improvements or taking climate action.

Climate change was not included although it was a significant issue (i.e., prairie drought, severe rainstorms, permafrost thaw, extreme weather events). These issues would require urgent attention in the near future.

Mr. MacDonald noted that the project began in May 2021 with data cleansing and analysis of the ICMS, moved through cost estimates, asset assessment, funding needs forecasting and ending with reporting in January 2022. There were 39,000 records reviewed – 17% had no condition information and many asset classes were underrepresented. Assets listed included 6,700 buildings (i.e., offices, arenas); 12,600 km of roadway; 406 bridges and culverts; 7400 km of water and sewer main and 1,400 plants and systems; and 980 vehicles. Cost estimating required defining and developing O&M and capital costs, applying them to the asset portfolio and forecasting future cost implications. Asset assessment started with inspection of the asset and a condition score being assigned. The condition scores were modified to determine remaining service life of the assets in inventory. The next step, investment forecasting, had 5 main investment needs: renewal; capital maintenance; upsizing; upgrading and new assets; and O&M. The study report was based on the format of a typical asset management plan: objectives; state of assets; asset needs; financial forecast; and assumptions and uncertainties.

Mr. James noted that there would be challenges and the report made some recommendations. There was benefit to improving the data source and cost capture approaches; the more robust the data, the more confidence in asset planning work and more of a case for working with ISC and justifying infrastructure spending. Building First Nations capacity in effective asset planning and investment delivery was a key concept. There was a need for project managers, people to manage contractors. This was not an easy job. Beginning the process of multi-year planning and funding was a critical improvement. They needed to evaluate and improve acceptable levels of service and understand investment needs on a nation-by-nation basis – understand local needs.

Questions and Answers

The presenters were asked what the biggest hurdle when collecting data from ISC data systems was and how could these systems be improved. The presenters noted that there were definitely some issues with ISC's data systems but nothing they could not get over but some required more work than others. For instance, they wanted to verify some of the population counts for specific First Nations; right now, ISC had these in First Nations profiles. They could not look at those profiles all at once; they had to click through all 600+ to get all of this information. There were ways to make this more user-friendly. He said they did not end up doing it manually, as they found a faster way to do it but it was a bit of a challenge.

A participant noted that for the O&M costs projected, about 3.7% annually of the total value of the asset portfolio, this was similar to the 4% figure identified in the industry. He asked what the presenters thought of the 4% asset portfolio value as a general guide for First Nations communities to understand and track their O&M budget. The presenter said that it took a lot of effort to understand O&M investment needs. If they could come up with quick rules of thumb to better understand O&M needs, that would help them. From that perspective, as a first cut, he said for sure that 4% as a rule of thumb was probably a good starting point. If they thought about some of the more remote systems where, for example, they

had a water treatment plant and they had to truck water to the properties for the First Nation, that probably experienced a much higher percentage of O&M costs than a piped system. Also building bottom-up enabled them to think about opportunities for identifying efficiency savings. It would not just be a blanket 4%.

The presenter was asked what type of margin of error was factored in that 2022 portfolio number of current asset value of \$45.8 billion. For each of the different asset types in the inventory, they assigned a confidence score. “1” was very high confidence, plus or minus 10% on unit costs on average across the system. “4” was their least certain; only a small amount of assets fell into that category. In general, on average there was about 20% plus or minus for that capital cost. In 2022, this could be around \$35.7B to \$55.9B. He said that they would expect it to be somewhere in this range, probably closer to \$45.8B.

It was noted that the asset category for “Grounds” had a minor value and the presenters were asked what did this category include. It was noted that this was a bit of an anomaly and was probably one area that was underrepresented. He said that he had not completely tuned into this until later in the analysis. It included wharves, floating docks, things like that.

A participant asked what type of population growth was being considered in the \$12.8 billion need for growth and what type of infrastructure assets were included in that calculation. Mr. MacDonald noted that those growth numbers, they had different growth values depending on the type of asset. Some assets grew off population growth alone; some would grow off the number of buildings in the community. In general, when they used population growth, they used the most recent Statistics Canada projections of Indigenous population. The 2016 to 2041 report for that had 3 different scenarios: low growth, medium growth and high growth. They opted to look at the medium growth scenario. In their sensitivity analysis, they did look at low-growth and high-growth scenarios as well and that worked out to about 1.1% population growth per annum, which might be a bit on the lower end. Mr. James added that population growth was an area where there was a high degree of uncertainty. They had seen numbers for populations ranging from around 405,000 – 410,000 in 2021 all the way up to 495,000 people in 2021. They had to just acknowledged that there was a high degree of uncertainty and tried to eliminate that by looking at the growth percentages. Growth was not an easy one and there was all sorts of ideas around census and that kind of information. It was understood that growth information was a foundational piece for being able to accurately present their investment needs.

A participant asked a question around if the current total of \$73 billion included the recent increase in construction costs due to the pandemic or increase in oil prices. The presenters responded that the simple answer was “no” but they had flagged it as a major issue. They delivered this project almost entirely during the pandemic so they were already starting to see cost escalations. They heard about that ship getting stuck in the Suez Canal, there was the supply chain issue. They have got to believe that when they come out of the pandemic, everything was going to return to “normal”. They thought it was only perhaps in the last couple of months here that they have begun to think they were going into a “new normal” of prices. Materials costs have gone up anywhere from 10% to 60% in some cases. It was really difficult to judge what the future cost base will be. As those figures roll forward from 2021, which was the price/time base they used, as they roll forward they could no longer use an average 3% inflation rate. They needed to start looking at a 6% or more inflation rate.

The presenters were asked if this study already published and, if not, when would it be issued. The presenter said that it was not ready yet. They have presented slide material at the Special Chiefs’

Assembly back in December 2021 and the Chiefs' Committee on Housing and Infrastructure and he was not sure if those materials were available. They were finalizing the actual report at the moment and getting the French translation done. He anticipated it would be ready in the next month or so.

There was a question raised around how did they chose the asset categories and if they were to coincide with ISC categories. The presenters noted that these were the categories straight from the Integrated Capital Management Systems categories. They did not change them at all for this study.

There was discussion around an improved housing situation on the reserves and if they had taken into the consideration how the numbers might increase in that situation. The presenters said that they did consider this but it was a bit of a loop because they could not evaluate that quantitatively but they had discussed it.

A participant asked about the presenter's statements around limitations to the study at the beginning and he was asked now that it was finished what would they add. Information confidentiality was the key issue for not knowing. They were told that the respondent knew that they had a treatment plan but the individual had no clue where that treatment plan was. The other one was when they did not have the name of the asset. When they typed in to the ICMS database, there was the name of the asset, the asset type, sub-type and so on. In the "Name of the Asset", quite often people would put the size of the treatment plant or "this was for a lagoon system" or it's "deactivated wastewater plant)".

He also noted that some of the descriptive information went into the name, so they did not have that. They had a treatment plant but they had no idea how big it was, they did not know what type of treatment plant it was. They really would have appreciated some of that information. It would have given them a lot more confidence in some of the analysis. They thought they looked at previous reports and there was a report done back in 2011. There was a report in there about different types of treatment plants in Canada, they knew that treatment systems have been upgraded quite extensively over the last ten years, so they have a reasonable feeling about what types of plants were out there. He said that that information would have been invaluable, both regional and location information.

A participant suggested that with the asset management "train the trainer" process, they could actually train people on the type of information that would be useful in data collection. The presenters agreed.

The presenters were asked how often would this type of study be done. The response was that, typically, they were done in line with election cycles; so, asset management plans, when they were done for a community, they might be done every four to five years. As a national study, thinking about some of those inflationary challenges, supply chain challenges, it probably should be done every five years.

Mr. James noted that he had comment on the data; they talked about the data never being good enough but, realistically, it was better than they ever had before. As a society, they had never had such good data; they did want to acknowledge that and also the fact that they were able to get a dataset with condition information coming from ACRS. Whatever they think about that, they wouldn't have been able to do that for municipalities in Canada.

It was noted that when people saw what data could contribute – this kind of analysis, this kind of outcome that would benefit them – then they would see the benefit of actually putting it in. With these initiatives happening more often, people would see the benefit and spend a little more time including the data because it will come back to them in some form.

In reference to the Neegan Burnside study, the presenters were asked what they did here and what was done in the past was there any information they could get from that gap. The presenters said that these were a little bit different. They thought that report focused more on that level of service gap in water and wastewater. They thought that was partly what led to this closing of that level of service gap with removing long-term drinking water advisories that the government had been working on over the last ten years. They were a little bit different but they were able to draw quite a bit of insight from them. They just were not necessarily able to benchmark some of the gaps in condition and the funding and so on from that perspective.

Examination of Regional Compatibility in O&M Level of Services Standards to Advance Self-Determination

Presenters: Guy Latouche, AFNQL; Dr. Guy Felio, P.Eng; Marie-Elaine Desbiens

Mr. Latouche introduced himself and began the presentation with the context which included an overview of the eventual transfer of control of housing and infrastructure to First Nations; to provide a reference to help determine the funding level required; to compare the levels of service between a First Nation and a municipality; and, to help First Nations move towards self-determination. He said that there were six technical components to advance First Nations' self-determination: assessing basic and future needs; service level standards; in-depth assessment of asset condition; determining life cycle costs; a sustainable financing formula; and, the transition and transfer of powers.

The presenter continued outlining the objectives and mandate of the project was to determine a methodology to analyze regional comparability of "levels of service" between First Nations communities and small municipalities in the Quebec Region. The expectation was that the approach and findings would be shared with other regional First Nations entities. For example, in the service category for sports and recreation, the key performance indicator (KPI) for winter sports programming would be "Cost of service/population". The comparison showed it was much more expensive per capita in a First Nations community. With that information, it was important to look at the context that would explain the difference. In the First Nations community, the following factors come into play: demographics: larger percentage of youth than in municipality; location: no nearby/adjacent facilities. Community needs to build their own; and, social – strong community emphasis on youth issues and programming.

The project had three phases: Phase 1 – literature review; Phase 2 – information collection (6 communities – 3 First Nations; 3 municipalities); and, Phase 3 – development of methodology. Dr. Felio explained that in Phase 1, they began looking at levels of service, regulatory context and performance indicators for services and assets. There was a great deal of literature around levels of services but it was often vague. Technical levels of services (assets) were usually better defined because of clarity of compliance regulations. Community levels of service reflect primary community priorities/choices. Some KPIs required extensive data collection and the idea of the project was to determine what would be practical, affordable and effective in terms of using KPIs.

During the literature review the focus was on regulatory levels of service (codes, standards, policies and directives) which drove technical levels of service (federal and provincial mandates including ISC and CIRNAC). There were regulatory regimes for third-party services (i.e., education, telecommunications) but they did not necessarily cover all aspects of level of service standards. The relevant regulatory levels of services for assets and services being provided therefore needed to be identified and considered. Specific performance indicators used related mostly to the strategic level for community services (water supply, sports and recreation, etc.) and included cost/affordability; reliability; availability, and safety and security. Operational performance indicators for assets required for provision of services (roads, bridges, buildings, etc.) were also taken into consideration. These indicators included condition, capacity, expected service life and life cycle investments.

The literature review revealed the need to identify two different types of service level: the service itself; and the assets that were used to provide that service. The methodology was developed from this premise, using these concepts and guiding principles. The analysis looked at level of service standards for essential

services, so “essential services” – usually associated with critical infrastructure - had to have a definition. The definition used, as stated by Public Safety Canada, defined assets and services that were “. . . essential to the health, safety, security or economic well-being of Canadians and the effective functioning of government”. Disruption to critical assets and services could cause catastrophic loss of life, adverse economic effects and loss of public confidence. In normal times, all services to residents were essential to the health, safety and well-being of a community. In times of crisis, specific services and assets were critical or essential for emergency response.

Ms. Desbiens continued the presentation stating that Phase 2 of the project gathered information from six communities. The criteria for selection of 3 First Nations communities and 3 matching municipalities was based on: location (external access to services); population; remoteness; and, project team knowledge of community. The objective of Phase 2 was to test the availability of services and asset data for comparative analysis between a First Nation community and a “paired” municipality. The communities paired were: Kebaowek First Nation and Kipawa, QC; Listuguj First Nation and Pointe-a-la-Croix, QC; and, Wemotaci First Nation and La Tuque, QC.

Information gathering focused on existing and available documents including ACRS reports, Emergency response/measures plans, asset management plans and other relevant documents. A questionnaire was sent to community representatives and interviews with one or several representatives were conducted and followed up, if necessary. Data analysis revealed that there was little information on service levels except for service levels established by laws and regulations. There were few indicators to assess condition of assets. There were many instances of collaboration between municipalities for security services (fire, policing), sports and recreation facilities and in some instances, snow removal and wastewater treatment. Few communities had formally identified essential services and critical assets; however, many communities had initiated or completed emergency response plans.

Dr. Felio said that data collected from the municipalities and First Nations allowed a focus on development of a comparison methodology considering the type of information the communities would have available. The goal was to create something that could be used with existing data and their own knowledge and experience. Guiding principles allowed for the inclusion of more than one municipality. Community profiles added flexibility with content for comparison (demographics, location, cultural and social settings). Qualitative estimates from community representatives were deemed acceptable where quantitative comparisons (e.g., Statistics Canada data) was not readily available. The framework was based on context, services available, assets and key performance indicators. Excel-based worksheets and a User Guide were created to facilitate data collection, worksheet completion and assistance in applying the data analysis methodology.

The first step in the methodology was to select the communities for comparison, considering factors such as location/environment, demographics, and social setting. One or more municipalities might be chosen as some contextual elements might be common with one but not another municipality. Next in step one, the communities collected information as per the “Context” worksheet and the project team confirmed the selection of paired municipalities. The contextual profile of each community was based on available knowledge and validated with each community. The second step was identification of services provided to members of the community. These services might be provided by the community or a third party. Regulated services should be identified, as well as the primary objective of the service (i.e., mobility, health, etc.). The third step would provide the KPIs for each of the services provided. For each service,

identify service prioritization (e.g., core, essential during emergency situation, quality of life). Then estimate, based on local knowledge and professional judgement, the KPIs for each.

The KPIs recommended were: Availability of/access to service; safety/security of service; reliability of service; cost of providing service; affordability of service to residents; capacity to meet demand; support of community wellbeing; and, responsiveness. Community representatives rated selected level of service KPIs for services.

Step four was comparing level of service KPIs with the local municipality and see if they less/equal/more in the First Nation. If equal, then no further analysis was needed. If KPI was more/less between the First Nation and the comparable municipality, they would explore the reasons. They asked if it was a question of context or assets. If assets, then they would analyze and compare service KPIs. The Excel worksheet for level of service comparison consisted of the transcription of the service KPIs from the First Nation and the comparable municipality and highlighting the First Nation KPI cells to indicate if the rating was significantly better, equal or worse. The project team would then indicate if the level of service met the established KPI for the community. When completed, the differences were visible and the reasons why could be established. For assets, there was a similar process.

For assets, five general KPIs have been selected for comparison and were rated on a scale of 1 to 5. They were: condition; functionality; capacity to meet demand; expected service life; and, sustainable life cycle investment. Assets were compared and analyzed in a similar fashion as for level of service. The User Guide contains step-by-step guidance on application of the methodology; various worksheets in Excel format (master worksheet; community data collection). The Guide was intended for use by the Comparison Analysis Team. It was noted that all documents were available at <https://apnql.com/en/housing/>. Mr. Latouche stressed the importance of asset management plans playing a key role to support comparative analysis.

Questions and Answers

A participant asked about the literature review and some examples of what was reviewed. Dr. Felio stated that they looked at a lot of regulations that applied to all the services being provided. This was important because they had to put it in the context of the regulatory framework. It was specific to Quebec, but it would not difficult to recreate for every region. The second piece was literature about levels of service. There was a lot of literature with descriptions of levels of service but not really giving what the measures of service should be. It became difficult because they would like to have all these but they were not sure how they would measure it. They spent quite a bit of time on those level of service definitions. They also looked at the contextual piece – the social piece of both the First Nations and the municipalities. At the end, if they were to do a comparison of the levels of service between First Nations and municipalities, they could not do it. It was difficult to impose a standard on any of these communities because they would have different types of priorities. Ms. Desbiens added that they looked at all of the specific programs each community could have for different categories of members that was accessible on their websites and all the regulations from the provincial government because some services were provided by the provincial government instead of the First Nation. They covered all those possibilities in their literature review.

The presenters were asked if the methodologies would change for different regions and if they felt that those levels of service and the indicators seem to be universal. The presenters said that this was a good point. When there was an industry which was regulated, they really did not put a lot of attention on those

because they were regulated. The intent was not to change the regulations, the intent was to compare. If the municipality and the First Nation had to meet the same type of requirement, there was no need for them to try to compare it. These KPIs could be universal; it did not matter which province they were in – finding how many people get ill by using your service was universal. They said that this was one of the driving principles they wanted to establish.

The presenters were asked who were the people contacted in this exercise. Mr. Latouche said that the first contact was the Director General. In general, they directed them to key people working in public works. He mentioned that data collection was not the easiest part of such a mandate; they needed data from the First Nation and they also needed to meet them. It was very time consuming even though their data collection methodology was very well-established and they had good contacts. Dealing with the municipalities was another challenge as the municipality did not feel they had something to gain with this exercise. They had to gain their interest. They argued that this was an opportunity for them to reflect on the whole issue of essential services, critical assets and an opportunity to embark on a deep reflection on their side. It worked well and they generally obtained a good cooperation from the municipalities.

They were asked if there was value in a pre-engagement with First Nations. Dr. Felio said that what they were targeting when a First Nation embarked into the exercise, that this becomes one of the tools in their toolkit. Normally, they would already be engaged and want to be able to have these negotiations with the funders and the federal government. They would hope the engagement part would already be there. There's certainly an education piece that had to go with it. Ms. Desbiens added that going to the municipalities, what they observed was that there was a partnership between each First Nation and municipality they had in the project. They have agreements, they share facilities. They were engaged in the project without too much forcing them.

A participant asked about their KPI measurements and the fact that they had noted that it costed more to provide services to First Nations than to their municipal counterparts. He used the example of that fact that it did cost more to repair an unmaintained car v. a well-maintained car and asked if a lack of O&M funding for First Nations factor in this KPI measurement. The response was that it was to illustrate what would come out of the process. It was hoped that each service where there was a difference in KPIs, there will be a technical note that summarized the difference in KPI with a contextual piece that led to that difference and the assets involved in providing that service. Mr. Latouche added that they agreed that it did cost more when they did not have a good maintenance plan and when they did not foresee asset replacement in a timely manner.

The presenters were asked about when they were trying to compare access to service or have some KPIs around state of the asset, it was suggested that maybe they would be able to determine the impact of lack of O&M in First Nations and see the outcomes. Dr. Felio said that a lot of the information that went into the data collection involved comments from the interviews. When they put all the pieces of the puzzle together, they got a good picture of why there was a difference and what could be done to ensure that they address that. Ms. Desbiens added that the contextual part was very important to explain the elements; it was not really possible to compare the First Nation and the municipality because there were different priorities and circumstances.

A participant asked, with the approach, if there was an ability to help communities quantify the cost of providing the services. The response was that this question referred to going into the asset management plan. This was the importance of having an asset management plan to help with this comparison. They

did not deal with costing or how to cost it. What they dealt with was getting that information from the communities.

Another participant noted that the municipalities were being compared to the First Nations, were they chosen due to having similar infrastructure assets or were they chosen simply because they were the smallest cities in the region. Mr. Latouche said that they were adjacent; close by the community. They wanted to have something very comparable – same region. Like Ms. Desbiens said, they very often had municipal-type agreements between the two communities. Some services were already linked together.

First Nations Infrastructure Resilience Toolkit (FN-IRT)

Presenters: Elmer Lickers and Dean Debassige (OFNTSC) and Dr. Guy Felio, P. Eng.

OFNTSC was approached in 2016 by Engineers Canada on how to apply Engineers Canada Public Infrastructure Engineering Vulnerability Committee (PIEVC) Protocol to a First Nations environment. The objectives were viability, flexibility and adaptable to First Nations. OFNTSC did initial testing in a First Nations setting and went further into developing, applying and building capacity around the toolkit and making it relevant for First Nations. It was noted that Engineers Canada no longer owns the PIEVC Protocol, as the ownership had been transferred to the Institute of Catastrophic Loss Reduction (ICLR). OFNTSC had recently signed a partnership agreement with ICLR which would look at joint sharing, network and information exchange between what they had as a PIEVC Protocol and what they had as a First Nations version.

Using existing information, such as asset condition ratings assessments (ACRS), local and traditional knowledge of infrastructure and climate, was the cornerstone in looking into how to adapt the PIEVC protocol and make it relevant. It was important to look at climate through the lens of local and traditional knowledge. Engineers Canada methodology was adapted and applied and called a “First Nations PIEVC”. It was also made to conform to ISO standards. A series of comprehensive workshops were held in the region. Lessons learned in the workshops refined and enhanced the Climate Risk Assessment (CRA) module.

OFNTSC participated in the AFN National Asset Management pilot project (AMP) and developed 3 fully-costed AMPs for Curve Lake First Nation, Moose Cree First Nation; and Kasabonika Lake First Nation. The project identified actual O&M costs for all three First Nations-funded assets, including costs for asset replacement, upgrades, repairs and renovations. The Alberta Municipal Affairs Asset Management Toolkit spreadsheet was modified for First Nations using existing data (ICMS, ACRS, etc.). This led to the development of the First Nations Infrastructure Resilience Toolkit.

Module I (Data Structure and Sources) information comes from ACRS reports, the ICMS database, and local/traditional knowledge. Climate sessions were held and 10 different regional climate models were developed. This dataset was tied into Module II (Climate Risk Assessments) which looked at relevant climate parameters, built environment exposure and vulnerability risks and recommendations on mitigation and adaptation. Knowing the risk and knowing the inventory provided the base for building the asset management plans for each community.

Climate was playing a huge role in how First Nations look at their infrastructure. Many First Nations assets were vulnerable – nearing end of life and poor condition with inadequate O&M. Those were added

challenges in protecting that infrastructure. The toolkit module was being applied in First Nations in Ontario, Quebec and in Saskatchewan.

Dr. Felio added that Module I was the foundational piece for the two modules which follow. It started by helping the community put together the data. Data sources included ACRS reports, ICMS database, local/traditional knowledge, meteorological stations data and climate models. The toolkit had ten regional climate data profiles showing typical climate parameters, intensity thresholds and probabilities of occurrence (current and future) for each region and lists of recent extreme weather events affecting a region. Module I contains spreadsheets for data and asset inventory.

Dr. Felio continued with an overview of Module II – Climate Risk Assessment. The process started by identifying past climate events that had caused disruptions, malfunctions or failure and established a risk profile of the infrastructure under present and future climate conditions. This module started with the application of the PIEVC protocol for the water and wastewater infrastructure at the Mohawk Council of Akwesasne. The lessons learned in Akwesasne helped inform the first draft of the toolkit, which was tested again for housing and school assets in the Oneida of the Thames First Nation. Climate risk assessment started by defining the assets (i.e., infrastructure, buildings, facilities, environment). Then look at the threat (i.e., climate hazard): Is asset exposed to threat? If so, how vulnerable was it? What was the impact on the asset? How likely was the event? What was the probability of occurrence in the future? Once these questions were answered they could calculate the risk. A climate risk assessment worksheet had been adapted from the PIEVC Case Study done with the Mohawk Council of Akwesasne.

The presenters provided an overview of the case study of the Mohawk Council of Akwesasne. The study was conducted using the Engineers Canada PIEVC protocol and the report was available at www.pievc.ca/assessments. The objectives were: to identify the nature and severity of risks to components in a lifecycle context; a high-level assessment of the predominant vulnerabilities to climate change and optimize a more detailed engineering analysis; give recommendations for adjustments to design, operation and maintenance to improve/maintain levels of service; and, provide a structured, documented approach to ensure consistency and accountability. This process also preserves corporate memory.

All three districts (Cornwall Island, St. Regis, and Snye) were covered. Each district's water and wastewater infrastructure was covered and information was gained from the Mohawk Council of Akwesasne Technical Services, ACRS and ICMS data. Assets considered were the water treatment plant and the wastewater systems. Climate parameters were obtained from Environment Canada, the US National Oceanic and Atmospheric Administration, and also from traditional knowledge. How will the weather in Cornwall be fifty years from now? What happens if infrastructure was older and more vulnerable or was not being replaced in a timely manner? That generated a higher risk. The risks changed by 30% if infrastructure was not maintained in good repair. The study looked a number of climate hazards, assets affected and how the asset performance would likely be impacted by the climate hazard.

Mr. Debassige provided an overview of Module 3 – Asset Management Plan. This module established the lifecycle needs (O&M, rehabilitation) to maintain assets in a condition that met established levels of service. It provided the financial and non-financial requirements to maintain or improve service in a sustainable manner; guidance on establishing priorities, monitoring and reporting.

Historically First Nations have used a reactive approach to infrastructure; the asset management plan prompted a proactive approach to infrastructure management which was driven by aging infrastructure, public demand for a high level of service, stringent and changing regulations, population growth, liability/risk management, limited financial resources, increased accountability and technology advances. When the toolkit was developed, no one was looking to “reinvent the wheel” but borrowing best practices. The Alberta Municipalities Asset Management Toolkit was adapted to First Nations communities and sound data was imported from ACRS, ICMS, financial reports and other sources. The Asset Management Framework consisted of several pieces and asset activities. There were linkages between asset management, finance, legal and planning. There were a lot of moving parts in an asset profile. First Nations possessed years of data due to ACRS, going back 25 years. Graphs and worksheets were available and customizable for First Nations.

An overview of the Mamaweswen – North Shore Tribal Council Asset Management Initiative was given. Phases I and II (Awareness and Planning) were completed and Phase III (Implementation) was underway and was expected to reach completion in the fall of 2022. A brochure explaining the initiative and achievements had been created and shared internally and externally.

The next steps for this work including the development of a dedicated website which was expected to “go live” in June 2022. The website was designed to provide First Nations with full access to toolkit spreadsheets, templates and user guides and a platform for OFNTSC to manage the toolkit distribution and provide updates and client support. The platform was also designed to provide e-training, webinars and remote learning and provide links to local, regional and national industry best practice and standards.

Question and Answer

It was noted that the presenters mentioned using existing information and noted traditional knowledge. so a participant asked how traditional knowledge incorporated into the toolkit. Mr. Lickers said that the document they used in Akwesasne had a lot of key information on the social and cultural impact on communities. Something that stood out was their traditional lightning ceremonies had to be shifted; that was a cultural change for the communities because they were exposed to different climate patterns and that led them to alter some of the traditional scheduling. He also mentioned that they talked about engaging the youth; some of the elementary school kids explained that they had noticed that some of the local berries were smaller than they used to be. This was because the droughts in the climate patterns were changing some of their growing seasons. Some of these were key when they were trying to identify climate changes and trends that were currently happening. It was important to capture that and make sure they put this information in some of their models.

The presenter were asked if there were some examples of lessons learned that allowed them to refine and enhance the CRA module of the toolkit. Dr. Felio said that one of the lessons was, when they started doing the Akwesasne project, they asked what would happen if the infrastructure was not in the same condition as it was today. Identified through their own experiences with asset management and talking to various First Nations, organizations and municipalities, the difficulty of O&M was being able to justify their budgets. The O&M budget in a First Nation or municipality was very susceptible to budget cuts; when this happens, it would likely end up costing more when something was damaged. They felt that they could help O&M people justify their budgets by doing this climate risk assessment, incorporating the fact that the risks were going to increase if the assets were not maintained. This became a very powerful tool. Mr. Lickers added that one of the end results that came out of that was that they did not really need to build bigger and stronger, but they needed to have better processes around asset management or O&M. This

was the challenge a lot of the First Nations experienced. They did not have the proper O&M in order to meet those objectives. Climate was just an added risk to those particular facilities. The outcome was that they needed better O&M and these were some of the lessons learned.

A participant asked how uptake was and if they were getting more communities participating in these sessions. Presenters mentioned that they were getting more and more interest and they expected more after this conference as well as after their website went live. They had interest from many First Nations, not only on the inventory but moving in the direction of climate risk and asset management.

The presenters were asked if the idea would lend itself to a “train the trainer” kind of thing or would it need some specific expertise to deliver the workshop. They thought “train the trainer” was a good approach. It was always a consideration of the organization to take a look at how they could best serve their clients and support the application. “Train the trainer” was a good approach because it was a process; when they built the User Guides in the toolkit, they were relatively straightforward. Module I was really a database adapted from the Alberta toolkit and enhanced for First Nations. They had built in a lot of costing information that was applicable to local communities. Module II was a simple matrix that did *probability x likelihood* and there was their risk. Asset management was a process that tied the spreadsheet in Module I with any risk associated in Module II and walked them through their asset management plan from policy to strategy to roadmap and templates to go along with that, including a template to develop and prepare their own asset management plan. They thought they had built enough to get the communities going, so “train the trainer” would be a good approach. From there, they needed some external expertise – possibly on the climate side or on possibly on the costing side.

It was noted that in the climate data section, it indicated 10 regional Ontario climate profiles were generated. The presenters were asked if the First Nations in BC make use of this toolkit where their climate profiles could be more extreme than in Ontario. The presenters said yes; they had interest from the Indigenous groups in very different climates such as Costa Rica.

The presenters mentioned they built off the Alberta toolkit so they were asked if that meant it was Microsoft Excel-based and if the layout and function was improved for the Ontario toolkit. The presenters noted that it was MS Excel-based. A lot of that decision had to do with accessibility as well, as they did not need upper-level programs in order to use it. Additionally, it was noted that it was improved in such a way as to give better reports and presentations. There were also better links between the spreadsheet and existing data like ACRS, the reference manuals, the cost indices and so on. It could link to more sophisticated software like GIS.

It was suggested that communities had varying levels of capacity; the presenters were asked if some people could just pick up the toolkit and go with it, asking for help along the way. The presenters noted that if they already have proficiency in Excel, with a little help from the User Guide, it would be quite easy to pick up.

The presenters were asked to comment on creating dollar values to climate change impacts in order to include these costs in lifecycle investment profiles. They thought that a lot of very good work had recently been done by the Financial Accountability Office of the Government of Ontario that did a costing of the climate impacts on provincial and municipal infrastructures. All the documents had been published and the methodology was published. The presenters suggested that maybe in v. 3 of the toolkit, they could

include that kind of model; this would be another improvement. It was possible, at this time, but there needed to be some manual manipulation before it was completely integrated.

The presenters were asked if the toolkit could produce or export summary reports. The response was absolutely; they have seen a few examples of the summary reports such as the asset management, some of the asset management policies and some of the spreadsheet reports. It could produce some of those summary reports. In looking at v. 2.0, which they were at right now, some of these findings and lessons learned would certainly help them advance it. They listened in the earlier session about levels of service; these would probably be enhancements as they moved forward.

The presenters were asked if the method of importing data from existing data like ICMS or ACRS was easier with the toolkit. The presenter said that this had to do with customizing it for the First Nation. When they looked at your ACRS and ICMS, they also looked at the way it was staged in there. They could customize the toolkit so they could have a very quick transfer, even carrying over asset codes. One of the challenges was that they were integrating various databases; for example, they had the financial reports from PSV3150. One of the challenges was to ensure coherence between all those databases. ACRS only worked for ISC-owned assets, the community had much more than what ISC, Health Canada and CMHC was funding – they had different reporting formats. What they saw in terms of the value of building this asset management inventory and spreadsheet was that now they could consolidate all that data. It created a unique portal for seeing all the data; seeing all the assets the community had to manage.

A participant asked if there was any thought to providing this content back to improve the Alberta toolkit and if the Alberta toolkit was also making modifications and learning from their experience in creating this toolkit. The presenter said that it certainly brought in the perspective of what they liked to call “partnership”. It might be a great opportunity to go back and see where they have advanced in the toolkit and how they could share and collaborate with each other and bring some coherence between the two.

Data Gathering

Presenters: Bob Radloff, Andrew Brink and Erik Groenenberg, Robert Radloff & Associates

Mr. Radloff stated that the firm of Robert Radloff & Associates (www.radloffeng.com) had been working with the Asset Condition Reporting System (ACRS) program, primarily in British Columbia and Yukon for over 20 years. They were experienced in First Nations, municipal and industrial infrastructure projects as well as community planning and development. Over this period of the time, the ACRS program had changed and improved. The expanded E-ACRS provided useful information for capital management and long-term asset management needs.

Mr. Brink continued stating that the ACRS program identified projects and assesses on-reserve assets funded by ISC and occurs in each community on a three-year basis. E-ACRS was “Extended Asset Condition Reporting System” had improved readability and was designed to promote O&M, support asset management and capital planning over the next 35 years. It was introduced in British Columbia in 2010 and expanded nationally in 2021. The advantages of E-ACRS included: more accurate estimates; projects were clearer and more informative; assisted in prioritizing O&M work; provided lifecycle capital plans; and, provided data for asset management. Charts and reports could be generated; for example, asset replacement value by asset category or new and outstanding projects.

In preparation for using E-ACRS, it was important to record drawings and old reports, ensure availability of community staff, know local pricing and spread out the schedule. During site visits, use experienced

inspectors and maintenance staff during inspections, listen to community members and take photographic records. In reporting, spread the workload to meet deadlines, use data/report management systems and follow up with each other.

Mr. Groenenberg continued with the presentation stating that housing assessments could identify what was needed now, predict what needed work next and highlight housing that needed the most work. The E-ACRS program inspired tools to do housing assessments in communities, giving communities the tools to make optimal decisions, prioritize work, cost savings and maintaining housing in a safe condition. All this would be in a familiar format. The program had the ability to generate not only an asset replacement report, but also component replacement.

Questions and Answers

The presenters were asked if a First Nations decide for itself that it wanted to conduct E-ACRS rather than ACRS was it possible or was this a decision that needed to be approved by ISC. In addition, they asked what the process was for a First Nation to begin to use the E-ACRS approach. The response was that, since 2010, E-ACRS was the standard for inspection and reporting in British Columbia and Yukon; it's the default that they used it. It had been expanded to other regions in Canada on a pilot basis; there was been work with some of the firms in Ontario to implement it there. They thought it was the intent of ISC to make this the standard across the country.

The presenters were asked if the First Nation could choose to go to E-ACRS at any point or was there a process. The response was that it was their understanding that ISC would fund this enhanced ACRS process for all communities across the country. Whether that's in a particular First Nation, they were not sure.

It was mentioned that the presenter's firm did E-ACRS for the United Chiefs and Council of Mniidoo Mniising along with First Nations Engineering Services Ltd. (FNESL) in 2019. And the ISC interval for ACRS was every three years. The presenters were asked would was involved in updating the E-ACRS on the next round of inspections. The presenters explained that updating E-ACRS for the next round was taking the existing report and checking what projects had been done, marking them as "complete" or "incomplete" and adding new projects. It would be very similar to the older ACRS for updating but they would get a new 35-year lifecycle chart that was updated for new projects and new costing information. If the costs skyrocket, as they had been seeing, the 35-year lifecycle would account for that in the next 3 years. It was also useful in updating asset management data.

A participant asked a question around if ACRS were done every three years, often would house inspections take place. The presenters said that they have not done house inspections, that was a totally separate project from E-ACRS. The inspections were just inspired by the E-ACRS process and they wanted to use the same format as much as possible, not only because it worked fairly well but because it matched the format of what they had. It was one less thing to learn how to integrate into any asset management system they had. It was up to each First Nation on how often they wanted to do that. So far, they had done them for each First Nation as they have asked them. They have done for the client rather than for ACRS.

They were asked if they felt that three years was still a good timeframe for housing inspection. The presenters said that it depended on the First Nation and what they have done. If they did a lot of work to check off projects, update things and maybe even build more houses, then sooner rather than later was

good to update the inspection. If they know they had not changed all that much, maybe they would wait a few more years. It was situational.

The presenters were asked how they could get access to these tools, especially E-ACRS for the 35-year replacement reports. They had been looking at overly-complex tools (PSD Citywide) and this might be better suited to their Nation's needs. They said that they were quite familiar with PSD Citywide and they had used it in a couple of places. The 35-year lifecycle chart and table shown were a deliverable from the E-ACRS project. As soon as they got an E-ACRS project, they would have access to those. If they wanted to talk more about it, the presenters encouraged the participant to contact them offline.

A participant asked if there were instances where communities were hiring ACRS inspectors to also inspect non-ISC-funded assets. The presenter said that the simple answer was "yes". Some communities recognized the value of it. Every community was in a different position in terms of capital negotiations. Some of those were using it support of their long-term capital negotiations with ISC.

A question was raised around, if E-ACRS were adopted nationally, would it make sense for ACRS inspectors to use the same app to collect data in the field. They thought it would make sense because there was always development costs and they would be consistent. It would be good to have a national standard. If the community needed a program like this, it would be very hard to do something as large as an ACRS inspection without any program support.

The presenters were asked how they determined the costs for replacement - RSMMeans or local contractor quotations. The response was that they typically determined costs based on their own database, but they did utilize RSMMeans and local contractors. They preferred to get local contractor information if at all possible; typically, they did that for the smaller items. For replacement costs for a capital such as a building for instance, would be from their own database or RSMMeans.

A participant asked if there would be the possibility of assisting First Nations in transitioning to the more advanced E-ACRS system. The presenter said that, in a few situations, they had done some more in-depth follow up meetings after doing an E-ACRS inspection and producing the draft report. They had found those to be very helpful. When they get E-ACRS for the first time, there was definitely a learning curve and the presenter recommended a follow up. They thought the more formal, sit-down meetings consultants could have with the First Nation the better to make sure everybody was using the ACRS report to its full potential.

The presenter was asked what the method was to determine costs between communities. It was probably the location factor. He used the example of their office in Prince George, if they did a job here, the cost was going to be lower than if they do a job five hours from here. This would be the cost of transportation and others and these would be determined using their own internal cost references from different projects they did in the First Nation or region.

It was noted that, ultimately, ACRS inspections should be for the benefit of First Nations. This participant asked what feedback had they received from First Nations regarding how E-ACRS inspection had been more beneficial compared to data collected from regular ACRS inspections. The presenter responded that the evidence of that, for British Columbia and Yukon, was that there had been a gradual transition from just another report to being impressed by the linkages it could make. It's gone from a top-down ISC thing

to where the First Nations communities actually used this and needed this; they get value out of it. They thought that was the difference between the old ACRS and E-ACRS.

The presenter was asked if they linked the different parts of the lifecycle of a building together. He gave an example if they did not change the roof, it would affect the rest of the building. He asked if they always evaluated individually or could they link everything to get the real remaining life of the building. The presenter responded that, typically, it was up to the inspector's discretion. If the roof was not replaced and they were noticing that it was affecting the rest of the structure, they were going to downgrade all that. It pointed to the need for experienced inspectors who could see problems that were going to come up even if the stuff did not get done. Further to that, there were key components and, for a building, there were many components. If the structure was gone, it did not really matter what they did to the roof. The interactions between components had to be recognized.

A participant asked if there was a licensing cost associated with their software. The presenter said, currently, they did not have a licensing structure set up for it. They had been doing it on an "as-needed" basis. There were set up costs to it, importing the data from ISC and export costs to get the files back to ISC. Those were the typical associated costs, but they would be happy to discuss specific scenarios.

The presenter was asked if E-ACRS could work with insurance adjusters to replace fire-loss assets. The response was that the new E-ACRS did the co-fire form; it went into a lot more detail about the fire department and its availability, number of structure fires, number of fires, number of individuals affected by the fires and fire prevention programs. He said that he did not know how that would interface with the insurance company but they thought if they could show they had these active programs, it might be of assistance. They thought having the valuation forms created by ACRS would be good support, if nothing else.

The question was raised around if there were thoughts around using RSMMeans or other costing methods to inform projects and what about the availability of materials such as gravel, if not readily available. The presenter stated that RSMMeans was the standard across the country that they could use for costing. What they found was that a lot of the communities they worked with were so remote that RSMMeans was almost useless. It was a good starting point but it was so much more to get materials to the communities. If gravel was not available, the cost for concrete was exponentially more expensive and the cost for building roads was more expensive. Everything was more expensive. RSMMeans was a good starting point but, for remote communities, they had to have actual data from contractors who have done work there previously.

The presenter was asked how long it took them to go through a community and complete an assessment. The response was that, typically, they would take a day to two days. Some larger communities, it might take a week; that would not include housing. Housing was 4-8 houses/day.

The final question was around if the way or format the app collected information was compatible with the way ISC's ICMS database uploads its data. The presenter said absolutely.

Plenary Presentation: Indigenous Services Canada Initiatives Overview

Presenters: Nelson Barbosa and Lorne Younghusband, Indigenous Services Canada

The objective of this presentation was to provide an overview of the progress made on the implementation of asset management and co-development initiatives to support policy reform. In 2017, then Indigenous Services Canada (ISC) Minister Carolyn Bennett announced a joint review of the O&M policy framework. The AFN Chiefs in Assembly passed a resolution in support of the joint review. In 2018, First Nations and ISC technicians agreed to move toward a holistic approach to asset management and the AFN developed a draft asset management policy framework in 2019, which based on information provided through engagement sessions and pilot projects. Fiscal year 2018/19 saw the beginning of proposal-based funding initiatives to support the advancement of asset management best practices.

Mr. Barbosa stressed the importance of asset management planning and the need to consider the lifecycle of assets and infrastructure. He described the four essential elements of asset management planning: community; information; money; and systems and processes. Mr. Younghusband mentioned that one of the elements identified in the joint review and co-development work included the asset management program launched in 2018/19 with funding of \$15 million over 5 years. This funding had been extended, starting in 2022/23 with an additional \$35.7 million over 4 years. The second element was E-ACRS inspections which provided a long-term forecast of future capital lifecycle needs. E-ACRS inspections included the assessment of an asset's current condition and the identification of deficiencies; forecasting capital investment needs; assessing O&M activities; and recommending enhanced approaches to meeting the day-to-day needs of assets.

The presenters noted that the proposal process for the asset management program was open until September 30, 2022 and that submissions received after that date may be considered for funding in 2023/2024. The program supported three phases of activity for the advancement of best practices in asset management, which were: awareness and training; development of asset and maintenance management plans; and, the purchase of software to provide ongoing support in implementation and management of infrastructure. It was further noted that the program was intended to be evergreen and ongoing.

ISC would be providing technical briefings to interested parties to support increased understanding of the process prior to initiating an E-ACRS inspection. The presenters noted that interested parties could arrange a date and time for an information session through their regional office.

Budget 2019 and the 2020 Fall Economic Statement included \$298.4 million in annual ongoing funding for water/wastewater O&M, as well as funding to stabilize capacity initiatives. It was noted that Budget 2021 announced ongoing annual funding for O&M including \$296 million for Other Community Infrastructure (OCI), \$51 million for health facilities, \$39 million for solid waste and funding for long-term capacity initiatives. As a result of the recent budget announcements, O&M formulas had been updated to better reflect current costs. The Department would continue to work with First Nations to explore approaches to funding an asset's lifecycle needs, including periodic capital investment for existing community infrastructure.

The presenters highlighted the following outcomes of the Asset Management Program: awareness workshops for 194 communities; 52 communities supported to develop asset management plans; and, 22 communities supported in implementing asset management plans.

Mr. Barbosa noted that a joint review and co-development of the asset management policy was ongoing. Future discussions would include the identification of options for a holistic funding approach to management of infrastructure lifecycle needs and roles/responsibilities related to major capital

investment. He noted that funding under the asset management program could be accessed by submitting a proposal to ISC regional offices and that First Nations and Tribal Councils could request an E-ACRS inspection information session through their regional office as well. He further indicated that proposal-based funding was available to support this in 2022-2023.

Questions and Answers

A question was asked about whether ISC was the only entity that could look at the input from E-ACRS. They were also asked if this would lead to an ISC asset management plan and whether it would lead to additional funding. The response provided indicated that there were enormous funding pressures on infrastructure, whether it was related to building a new structure or maintaining an existing one. It also noted that the hope was that the tools – both aggregated information and national data – would support increased advocacy for more resources.

A participant asked if there were plans to re-evaluate the O&M funding available to First Nations. The ISC representative responded that having a plan to have a plan, was an objective; water was a good example. It was noted that there had been sustained investment from O&M in water for the last six years and that was predominantly driven by need but also being able to identify those needs through community-based data. He further indicated that ISC saw results there and their hope in this expanded work was to see increased or enhanced O&M funding and asset management funding for schools, health facilities, roads and support infrastructure.

A participant noted that it was 2022, and there were still drinking water advisories in place, and sought information on whether there were new initiatives forthcoming to expedite addressing these drinking water issues in First Nations communities. The participant further noted the increased cost of building in comparison to previous years. ISC representatives noted that there were 38 long-term drinking water advisories in place in 29 communities and that over 120 advisories have been lifted since 2016. And that every long-term drinking water advisory situation had a plan to address it. Regarding inflation, this issue was built into their budgetary regime and was part of the requests to the Minister of Finance because the cost of building a building was more than it was even 2-3 years ago so that was built into the department's funding requests.

A few questions were raised about whether the proposal process for the asset management program for 2022-23 was like the process in 2018-2019. Participants asked if the requirements were different and if the information was now on the ISC website. ISC representatives stated that the process was very similar to the process employed in previous years. It was further noted that the website was being updated, however, there was contact information on there for the regional offices and that if they went on the website, they would see an outline and the regional office could walk them through the details.

A participant asked if there was an estimate on the costs of going from ACRS to E-ACRS and what capacity was required for a community to get to an E-ACRS. The question of whether there was funding available to get from ACRS to E-ACRS was also raised. ISC responded that they wanted to get as many communities on board as possible. In the last few years there had been several delays, including COVID, so they had a bit of a backlog. It was noted that the cost estimates fluctuate and that the first time doing an E-ACRS would be expensive because there was a lot of data to be captured the first time going through it. After the first time, the costs stabilize.

The point was made that the infrastructure gap was supposed to be closed by 2030 and this was not far away; it was noted that this could not be accomplished by the private sector alone. The question of whether ISC and AFN could promote programs and funding initiatives that would support First Nations to manage their own infrastructure and construction projects was asked. ISC representatives agreed that this was an enormous piece of work and that they were working with AFN and others to better understand community-based critical infrastructure needs to close that gap. This work included not only asset management planning and maintenance and rebuild of assets that were currently in place, but also addressing that gap. It was noted that ISC needed to understand both of those pieces. ISC representatives further indicated that they heard from communities, leaders, and First Nations institutions about different ways of administering programming and moving away from project-based investment to community-based investment planning. They acknowledged that there was a big difference between managing a project and supporting holistic community investment. ISC representatives stated that was the world they would like to be in but ultimately, it goes back to identifying the gap and making the best case for resources in the financial cycle.

The question of whether the process to on-board new assets and start the O&M funding would be looked at to be made easier and more streamlined. In response it was noted that asset management planning was not a one-time event. Lifecycle management was like the gestation cycle of pre-feasibility and for communities that had E-ACRS inspections and asset management plans, they could identify assets that were not currently in place to allow for longer-term planning. It was noted that the intention was to have a holistic asset management plan and inspection based on assets in place and assets projected.

A participant stated that part of the National Chief's platform was to advocate for 100% O&M funding and asked if there was an ongoing discussion between AFN and ISC related to the O&M funding issue. It was further noted that it was challenging to take care of local infrastructure when they were short-staffed. The ISC representative indicated that they could not speak directly to the nature of the engagement with the National Chief's office but that they could confirm their ongoing work with AFN generally. It was noted that they were on Year 3 or 4 on development of an asset management policy and asset management regime. ISC also stated that there remained a need for better data and continuing to advocate for the necessary resources. It was further noted that, in relation to the water issue, there was 100% funding against the formula and that this took several years to achieve. It was the result of a recognition that maintaining water assets was expensive.

The question of whether the department could identify communities who had not participated in any of these conversations to date was raised and was there a way to do some outreach to those communities. ISC responded that it was a fair point as every community was different and with different capacity levels. It was acknowledged that this was a newer process in terms of the emphasis on asset management planning and there was a need for better data. The ISC representative stated that it was their hope that more and more communities on-board.

A participant asked a question about the \$296 million in the 2021 budget, as noted in their presentation, and whether the department had considered the fact that the pandemic, high construction costs and high inflation greatly affected First Nation communities in particular due to remote reserve locations. The response from ISC representatives indicated that decisions on budgetary investments were made at the political level and that ISC focused on using the data and information from tools such as asset management planning and E-ACRS to help build understanding of the critical infrastructure gap and that the data available makes the argument for those resources in the upcoming budget.

The question of what the “holistic approach” to funding meant was raised. It was noted that infrastructure in a community could be varied but there were several kinds of major infrastructure assets – schools, homes, water, health facilities, treatment centres, roads, bridges, and waste facilities for example. Asset management was about bringing all those things together. It was about understanding the interdependency of those infrastructure assets, understanding the interconnectedness and the lifecycle of those pieces and the investment planning associated. They noted that this was one way of understanding the holistic nature of infrastructure assets.

The question of whether there was collaboration between ISC and Infrastructure Canada to close the infrastructure gap was asked. The response noted that one of the big changes that had happened over the last few years was that other departments were becoming investors on-reserve and in other Indigenous communities, whether Métis or Inuit. It was further stated there was collaboration across several departments – Infrastructure, Natural Resources Canada, Environment Canada, Department of Fisheries and Oceans.

A participant asked if the department was looking at internal processes that might get the money out to First Nations quicker. The response indicated that they felt there was a growing focus on supporting projects that were high-demand and shovel-ready. Regarding the process itself, the ISC representative stated that this was not something that could happen overnight and that there was interconnectedness on, for instance, a large school or water treatment facility or health facility that required land use planning, understanding environmental impacts, feasibility studies and those things that needed to be community-directed to meet their needs. ISC was looking at accelerating procurement policies and practices to assist communities in a different way to see quicker results.

The question of whether the O&M updates would make it easier to access O&M formula data information was raised. The participant noted that they have made multiple requests for the information but have had no response to this request. The ISC representative noted that the formulas should be online shortly and that the regional office could walk them through and give an indication of what was driving their particular O&M funding level.

A participant asked about the current O&M formulas and whether this data had an influence on the level of funding. The response noted that all their O&M formulas were based on the number of assets and the size of the assets. They used the data they had available in their capital system. It considered the cost of living in specific parts of the country and it was broken down into a lot of different components depending on types of assets in the First Nation. This information should be available by asset in the near future.

A participant noted that with all this funding mentioned, the communities in the NWT was neglected a lot because they had to go through the territorial government and asked if there would be a northern initiative from ISC for the First Nations in the NWT. The ISC representative responded that there was a devolution agreement in the NWT and the primary relationship between Canada and the GNWT was Crown/Indigenous and Northern Affairs Canada. They further noted that Katl’odeeche and Salt River have received funding as Indian Act bands as part of budget 2021 investments. Also, Budget 2021 dedicated specific resources to NWT communities outside Salt River and Katl’odeeche. With respect to bridging the critical infrastructure gap and assessing needs, ISC indicated that they were working with Crown/Indigenous Relations for the pan-Northern approach, recognizing the reality in Yukon, where 11 of the 14 communities were self-governing and NWT being a largely off-reserve environment and Nunavut

being a land claim agreement. ISC noted that they would not say that the North was an afterthought, but definitely in the NWT context, the governance dynamics and the relationship with the government of the NWT and CIRNAC – was a different one. Budget 2021 recognized that different relationship.

A participant noted that this was not the first time they had heard that investments generally just go to “everybody” in the North, and there was no targeted investments specific to different types of communities. ISC noted that this was a good point and that there was a different type of reality across the three territories. In Yukon, the self-governing communities receive funding as part of the Council of Yukon First Nations – the treaty-based group – directly through CIRNAC. It was further noted that there were 3 non-self-governing First Nations in Yukon and that they were funded through the regional office similar to the south of 60 context.

The question was asked about whether they (the First Nations in the northern territories) were also starting to embark on asset management planning, E-ACRS, and data gathering in terms of their assets. The ISC representative indicated that on-reserve communities were accessing it and he believed some self-governing First Nations as well.

The question was raised of how the ten-year funding grants impacted community O&M funding as new assets were added and costs continue to escalate. The response was that this should be put into a grant already or in the next fiscal year and that there was essentially a re-basing that went on when O&M was calculated based on assets. Any new assets that had been built were considered.

A participant noted that OCCMM (ON) did E-ACRS in 2019 and that this year was their tri-annual update for ACRS. The question was posed about whether the department will wanted them to do E-ACRS or the older version which, in their opinion, did not make sense. The information in E-ACRS was way more beneficial. ISC representative responded that they should do E-ACRS for sure and to contact their regional office to ask for E-ACRS and find out about funding opportunities.

The question of whether the process of on-boarding new assets could be made more efficient to ensure O&M dollars were made available quickly after commissioning. ISC responded that they were not sure of the challenge there as they thought it was relatively quick. It was the understanding of the ISC representative that usually, once the asset was complete, they get a completion form stating the asset was complete and being used and they get the O&M fairly quickly. The ISC representative also noted that if there were specific questions, they were happy to take them offline if people send to them directly.

A participant noted that on Day 1, Chief Don Maracle mentioned a need to have emergency funds set aside to deal with floods and forest fires. The question was asked whether ISC was thinking of this for new extreme climate events so that First Nations could react more quickly. ISC responded that over the last couple of years British Columbia and Manitoba had seen historic levels of natural disasters including fire and floods. There were both federal and ISC-related programs related to emergency management including resources available to support communities rebuilding. He further noted that climate impact and climate change was factored into the costing for emergency management.

A participant asked how might the asset management plan help prepare for a climate emergency or natural disaster. ISC representative noted that OFNTSC did a good presentation on climate impact and how to integrate that into the asset management processes. He further stated that there were many

considerations when it comes to climate, such as where do they built new assets and what material to use. For existing assets, they needed to think about how they protect them.

It was noted that drinking water was an urgent issue and that they must end water advisories. Wastewater was also an issue. The participant asked if there were discussions at ISC to address wastewater management for First Nations with both centralized and decentralized systems. The response noted that First Nations-managed wastewater systems were part of the envelope of water investment. For waste, it was about managing that in a longer-term way so that system capacities could be developed now to project future use. Wastewater was definitely a component of the water program.

A participant asked when the ICMS was determined to be out of date and what was the best way to update it to ensure funding was calculated on current assets and needs of the community. The ISC representative stated that it was best to reach out to their regional office on that issue.

The question of whether the new School Accommodation Standards would also be available online. The ISC representative indicated that they believed so and that they also thought that it was publicly available information already.

A participant asked if there would be a response to the rising cost of a project in progress due to inflation. ISC stated that there was a response and it was done on a project-by-project basis. They further noted that they were seeing many projects coming in higher than initially designed, particularly if those designs happened in 2018/2019. It was known that inflation and construction availability had increased costs historically and that projects have received increased funding based on where they were at. A follow up question was asked to clarify if the response on responding to the increased costs due to inflation meant that ISC was taking away funds from someone else's project. The ISC representative noted that there was a finite amount money available and that was the reality. There were many projects and the demands were huge. Budget 2021 had a special pot of around \$150 million that was specifically for COVID-related cost increases; this was the first time that ever happened.

A participant asked whether there will be national overview of where the deficits were and what was needed and if ISC had the capability to do a regional and national overview. The ISC representative responded that the privacy issue was important and that they had to be careful and that he believed that there had been public reporting on level of investment and level of need since 2015. He also indicated that there was an interactive website that spoke to this. He noted that there were a couple of themes they kept coming back to in these discussions. One being the benefit of asset planning in terms of what it could do in lifecycle management, proactive planning, and cost reduction through preventive means. Secondly, was the power of data and the impact of data; not only for communities but also to strengthen advocacy for needed resources. A third theme was about the work they wanted to continue to do including expanding asset management planning, expanding E-ACRS, working in partnership on bringing these things to life. He stated that those were core principles they needed to underscore.

A participant asked if the department was considering new programs or ways to address the climate crisis. The ISC representative stated that on climate change, the national lead was Environment and Climate Change Canada. He further noted that from ISC's perspective, climate change considerations were now built into their program analysis and their costing analysis for all things. He added that this was not only in relation to infrastructure but also programming and services; climate was a huge factor in terms of their costing.

SUMMARY OF WORKSHOPS

NSTC/OFNTSC Asset Management Initiative Phase 1: Awareness

Presenters: Melissa Shawbonquit and Louisa Chiblow (Mamaweswen – North Shore Tribal Council); Elmer Lickers (Ontario First Nations Technical Services)

The North Shore Tribal Council (NSTC), represented seven First Nations: Batchewana First Nation; Garden River First Nation; Thessalon First Nation; Mississauga First Nation; Serpent River First Nation; Sagamok Anishnawbek; and Atikameksheng Anishinawbek. This session provided information on the NSTC development of an Asset Management Plan with six of the seven NSTC member First Nations. It was acknowledged that the work on the plan was based on the previous work done by the Ontario First Nations Technical Services Corporation (OFNTSC).

The presentation outlined many factors that have prompted First Nations to be more proactive in managing infrastructure including: aging infrastructure; public demand for a higher level of service; stringent and changing regulations; population growth; liability/risk management and increased accountability; limited financial resources; and technological advances.

The NSTC was able to secure funding from ISC for a 3-Phase that included Awareness; Planning; and Implementation. Presenters outlined that Phase 1 of the process was focused on community engagement, which involved the following: a survey of interested First Nations; site meetings with the Directors of Operations; Band Administrators; Infrastructure/Public Works Managers; explanation of project phases; the establishment of team structure, emphasizing need for proactive management; sharing examples like the OFNTSC First Nations Infrastructure Toolkit; and creating partnerships with the OFNTSC and an independent consultant.

It was noted that the asset management plan had been based on accepted industry standards, was scalable, could begin in one department and expand. Phase 1 was completed and accomplished the goals of including community asset management self-assessments; regional workshops; and community workshops. A community's asset management journey began by preparing an asset management policy template and drafting an asset management strategy and roadmap. At present, asset inventory was maintained on Excel spreadsheets. Once asset management software was purchased, this information was easily transferable from the Excel program. A handout was prepared to provide community members and staff with an explanation of asset management and its benefits. The self-assessment process allows participants to determine their level of capacity and competence on asset management. A self-assessment tool was developed and deployed. The process of self-assessment included virtual training sessions on completing the self-assessment. The results of the responses were analyzed, tabulated and followed up with each community to clarify responses.

The self-assessment toolkit not only looked at corporate asset management but also people, resources, data and information and how much participants knew about the data and its attributes. Planning was the fourth pillar in the self-assessment. The corporate asset management profile contained a series of items to review, ranging from policy and strategy, monitoring and reporting, levels of service, risk management to climate change. When the analyses were done and some short- and medium-term action plans were being developed, the information helped determine training material for the community and

regional engagement sessions. Regional training sessions included a special training session that included neighbouring municipalities to share challenges and benefits surrounding asset management.

The self-assessment report set the stage for how and where capacity-building was needed, delivering the right message and providing a structure for building the training material. Awareness workshops were conducted which produced increased awareness and buy-in from the communities on the value, process and sustainability of assets through asset management planning. Each member First Nation received an Asset Management template tailored to assist development of their asset management policy. The policy would formalize commitment to asset management and outlines the principles and guidance for development and implementation in a systematic way. The asset management strategy defined the context and objectives for asset management and defined how the system would implement the principles of the asset management policy and support delivery of the objectives.

Questions and Answers

The current deficit in funding for asset management in First Nations communities was raised by participants. It was explained the number comes to \$73 Billion and that as a part of this conference a presentation was made by Associated Engineering, who have done a national asset needs study.

There was discussion on turnover of staff, practitioners and Chief and Council and the importance of planning to plan for replacement, and the refreshment of dates in asset management. The presenters confirmed that this was a concern and asset management was a key reason plans were required. The asset policy was the building block the communities needed in order to look at asset management in a different context and build it into organizational structures.

A question was raised about whether First Nations felt that this was the right place to start or if there was more interest in the inventory system and data as opposed to plans and policy. It was noted that for the NSTC, it was a combination of views but there was a recognition of the need to streamline the process. One of the key features was working with communities right from the start and guiding First Nations through the process. Time was spent bringing the asset management message to multiple levels in the community to keep them engaged.

On many First Nations, the houses were owned and managed by the First Nation. A question was raised about whether housing was being incorporated into this asset management plan and how many First Nations submitted housing data. It was noted that one community submitted housing unit data and it had been incorporated. More communities were considering submitting their housing information. If they did decide to include housing, conditional assessment reports were completed for each of the properties and from that assessment, the First Nation could start developing a plan.

A question was raised about the recently completed AFN housing needs assessment and whether that would help inform the plan. It was noted that the AFN needs assessment would bring together information such as the state of the infrastructure and what were the needs.

Advancing Asset Management Practices in First Nations Communities

Presenters: Kevin Woods, P.Eng., North Shore Mi'kmaq District Council, NB, and Tina Milner, Fort Folly First Nation, NB

The North Shore Mi'kmaq District Council (NSMDC) was a not-for-profit representing seven Mi'kmaq communities in New Brunswick: Amlamgog (Fort Folly); Tjipogtotjg (Buctouche); L'nui Menikuk (Indian Island); Metepenagiag (Red Bank); Natoaganeg (Eel Ground); Oinpegitjoig (Pabineau); and Ugpi'ganjig (Eel River Bar). The NSMDC offered a number of services to its members including technical services; financial advisory services; Child and Family; training, employment and skills development; traditional ecological knowledge; and community development advisory support. The technical services division had expanded in recent years and the added capacity had provided: an Infrastructure Asset Management program and the Asset Condition Reporting System (ACRS); a maintenance management program; housing programs; an emergency management program; a solid waste management program; a circuit rider training program; and, a water HUB.

The presenters in the session shared information on the Asset Management program which involved: capacity development; tools and resources to support Chief and Council, band administration and O&M staff; developing an Asset Management Plan, policies and strategies for member communities; and sustained support in implementing and advancing asset management practices. At the NSMDC, the asset management program integrated easily with the existing maintenance management program and the ACRS. The NSMDC Asset Management program, in partnership with the Confederacy of Mainland Mi'kmaq, was launched in 2019 beginning with an awareness program. The program was rolled out in a sequenced pattern with additional communities being added each successive fiscal year. The primary deliverable for the rollout was the development of a community-based asset management plan, capacity building at the community and tribal council level through training, workshops and provision of a resource base for communities. Phase 5 will provided sustained support for member communities, a routine refresh of asset management plans, integration with other programs (ACRS, MMP), continuing capacity and policy development. The asset management plan framework began with a governance structure, moved through level of service to inventory of assets (including condition assessment and field observations) to risk assessment, setting priorities and lastly, financial analysis and planning.

Information was provided on Fort Folly First Nation and the tools, resources and strategies used in the Fort Folly project. It was noted that the First Nation had a municipal agreement with the Village of Dorchester, New Brunswick, for water and wastewater services and fire protection. A current description of infrastructure assets, natural assets, human resource assets, clean energy projects was provided. In addition, the presenters shared information on the inspections, enhanced asset condition reporting system trail renewal and life station renewal/replacement were part of future plans. The asset management plans would eventually be incorporated into the administration decision-making framework and further asset management policies developed. GIS would be integrated into asset management and O&M practices. There would be continued transition to proactive infrastructure renewal with long-term funding agreements and migration away from an annual needs assessment.

Questions and Answers

A question was raised on whether all NSMDC communities were engaged. It was noted that all seven communities were engaged however four have CCTV inspections. Three communities have septic systems, so they would not do CCTV inspections. The plans were to have deployed all the resources to all 7 communities by the end of fiscal year 2023.

A question was raised about the estimated number of staff required to implement an asset management plan in a First Nation. The presenters indicated that the asset management planning was being supported by an overall coordinator plus another engineer who were focused on deploying the asset management

tools. This was in addition to a strong emergency management team. Other programs were leveraged including emergency management, maintenance management, ACRS, and the water HUB team. There would be one main contact in a small community. There were also training initiatives organized by the Tribal Council to engage youth to be more involved in asset management.

A question was raised about the rationale for selecting the FIIX CMMS software for asset management software. The NSMDC representatives mentioned that 14-15 months was spent on the maintenance management program evaluation of software platforms. FIIX CMMS was selected because of the unit cost per user, was cloud-based and it integrated well with other data management systems.

Discussion focused on the transition to green, renewable energy and whether that would require more asset management planning. It was noted that the solar projects involved batteries and technology that would wear down and some have a lifespan of 25 years so plans need to be made within that 25 years. The day that they added it was the day they started planning for new infrastructure and including that new infrastructure in the asset management plan. There would be ongoing replacements that might be required to support the operation over the course of its life. There may be some elements that expired prior to the completed service life of the asset.

Atlantic First Nations Water Authority: Asset Management Plan Overview

Presenters: James MacKinnon and John Lam (Atlantic First Nations Water Authority)

This session provided participants with an overview of the development and planning of an Atlantic First Nations Water Authority (AFNWA). The presentation included background information on the question of liability for water in First Nations communities, the 2005 Auditor General's report that cited the unbalanced quality of First Nations water compared to non-First Nations communities of similar size and locale, and the 2006 Expert Panel on Safe Drinking Water for First Nations.

It was noted that in 2012, as the *Safe Drinking Water for First Nations Act* was in development and the Chiefs in Atlantic Canada retained the Centre for Water Resources Studies at Dalhousie University to review best practices and develop detailed regulations for First Nations in Atlantic Canada. In 2013, the Act received Royal Assent and passed into law. The Act was not well-received by the First Nations, citing engagement and liability concerns and because of these concerns the regulations were not enforced. It was also noted that the AFN was currently working to repeal and replace the *Safe Drinking Water for First Nations Act*. The presenters shared information on the 2012/2013 a water and wastewater infrastructure asset condition assessment produced by Dalhousie University and the options for a Regional First Nations Water Authority. A draft corporate structure was contracted and delivered with results based on extensive engagement with First Nations Chiefs, Elders, water operators and industry professionals. A full-service decentralized hub and spoke model was chosen. In 2018, the AFNWA was incorporated under the federal Not-for-Profit Act as a professional utility, owned and operated by First Nations for the provision of water and wastewater services for member communities. Traditional knowledge and culture were embedded in the highest levels of decision-making. The presenters noted that it was expected that the framework agreement between ISC and AFNWA which would lead to the transfer of all responsibility for development, provision and funding of water and wastewater services from ISC to the AFNWA by the spring of 2022.

The session also included information on the water cycle in a community from source to treatment to delivery to wastewater treatment. The AFNWA risk management approach was named by the Elders Advisory Lodge as Nujo'tme'k Samuqwan or "We take care of the water". The AFNWA looked at the capacity of the receiving water for wastewater and what was needed for safe discharge into the receiving waters. Environmental risk assessments were performed to establish discharge objectives over and above National Performance Standards. The presenters noted that for drinking water, Health Canada requirements in the *Guidelines for Canadian Drinking Water Quality* were followed. The *Nova Scotia Treatment Standards for Municipal Drinking Water Systems* were followed.

The AFNWA, with the support of a consultant and participation of 17 First Nations, developed an asset management framework based on the following pillars: People and Leadership, Information, Lifecycle Process; and Financial Sustainability. The factors in the level of service component included quality of water and wastewater produced and environmental acceptability if they were discharging to a receiving water. Operator training and engagement were also included in the development of the plan. An asset hierarchy was developed for categorizing all water and wastewater assets and a ten-year capital plan for the years 2022 to 2031 was formed with an inflation factor built in.

Questions and Answers

A question was raised on whether full lifecycle investment profiles were created. It was noted, that the planning was for 10 years as the funding from ISC was for a 10-year period, however, there was the ability to project, on a recurring interval, when those assets would need to be renewed. It was noted that within the capital plan there was an integrated resource plan that would be done for 25 years after Year 5.

There was comment on traditional knowledge, climate change and the quickly changing world, and whether there should be a focus on methodologies in the acquisition of knowledge. It was noted that the Lodge had been functioning less than a year and it was focused on providing input into regulatory development and what it meant not only from a Western scientific lens to regulate water quality but also for the community. It was also noted that there was much to gain by looking at the traditional understanding of the interconnection between different species of animal life, the water cycle and, as climate change starts to take hold, how that affected the life in that water.

There was discussion of the challenges of community leadership changes and maintaining momentum on asset management initiatives. It was noted that consistent and deliberate communications and relationship building were identified as the key elements. Updates were provided consistently at the AFN forums, the APC All-Chiefs forums, and in communities to Chief and Councils and operators.

A question was raised regarding institutionalizing asset management within communities by requiring asset management policies at the community level to avoid issues related to changes of government. It was noted that this would be encouraged at the community level but when the AFNWA developed an asset management plan, it was for the Atlantic First Nations as a whole. For those communities that become members, asset management was institutionalized through the AFNWA.

Participants discussed the issue of changes to standards or new standards being created and how this was included in the cost assessments. The presenters agreed that ten years was a long time to forecast for operations and for capital, so it the opportunity to re-cast and renegotiate at the five-year mark had been built in to the work, however, there was nothing specific to climate change but there was a significant investment to address environmental risk assessment.

Education Infrastructure

Presenter: Bram Lerat, Assembly of First Nations

Education infrastructure was an important element of First Nations asset management. This session focused on the methodology and results of the *AFN – First Nations Education Infrastructure Capital Needs Assessment, 2021* report, and the *AFN-First Nations Education Transportation Assessment*. The review was mandated in July 2019, when the Chiefs in Assembly passed Resolution 24/2019 *First Nations Education Infrastructure Review*, supporting policy or program changes to First Nations education infrastructure. The changes and improvements would recognize and support First Nations' Treaty and inherent rights to education and First Nations control of First Nations education. The Chiefs' Committee on Education (CCOE), the National Indian Education Council (NIEC) and Assembly of First Nations (AFN) would lead the review.

The *AFN – First Nations Education Infrastructure Capital Needs Assessment, 2021* reports on a 20-year planning period under federal guidelines for education infrastructure capital needs. The federal guidelines included the 2021 *School Space Accommodation Standards (SSAS)* and *Level of Service Standards and Management of Teacherages on Reserve*. Northern and remote capital considerations, overcrowding estimates and current full replacement needs were also identified. The resulting dataset had over 1400 assets, schools and teacherages, obtained from the ISC Integrated Capital Management System (ICMS) and Nominal Roll information. Information evaluated was school size; building condition; grades taught; and nominal roll.

The *AFN-First Nations Education Transportation Assessment* details costs involved in providing education transportation services, highlighting operational differences between First Nations and provincial school jurisdictions and providing a possible solution that would serve as a tool and resource to identify transportation needs and assist in cost estimation for transportation services in Regional Education Agreements (REAs) and to inform development of a new transportation funding formula for First Nations. The transportation cost structure consisted of capital costs, direct operating costs, and administration. All First Nation participants reported current transportation costs exceeded the funding allocation provided.

In summary, First Nations require \$3.8 billion for new construction, additions and planning for schools. The current rate of federal investment was only 23% of requirements. Infrastructure O&M was currently funded at 33-34% of actual needs, resulting in an annual shortfall of over \$225 million. The median education transportation funding shortfall was 45% and was being made up by accessing other funding sources, such as Jordan's Principle and instructional funding.

Questions and Answers

Participants discussed the impact of the deficit on enrolment, communities without high schools, and whether there was a possibility of combining two or three communities in a zone and creating a place for a high school students to stay closer to the community. It was mentioned that there was a significant impact on enrolment when a First Nations school was not funded properly and capital needs have been ignored. It was not unusual for a First Nation, if they were close to an urban centre, to send the students away for school, however, if they built a First Nations school, they would see students returning back to the community where there was the benefit of language, culture and identity. With respect to high school

shortages, there was about 50% of First Nations that did not have secondary schools. First Nations have inherent and treaty rights to educational structure on-reserve and learning in their home communities.

It was noted that the regional wrap-ups respect First Nations data and that in order to come up with the national figure, the regional indicators were sacrificed. The difficulties in accessing quality data due to privacy laws that must be followed by the federal government were noted. It was also emphasised that this was the first attempt to collect the data on the magnitude of cost and total capital need. Better information and numbers that were unique to the community must come from First Nations and the tribal organizations. The work was being done to build those pieces to get to the big picture.

The session closed with a comment regarding the \$700 million funding levels over 4 years and how every year that investments were not made meant they were going further and further into deficit.

Bridging the Gaps between Water and Wastewater Operations, Maintenance and Asset Management: A More Sustainable Path

Presenter: Nick Larsen, P.Eng., Ontario Clean Water Agency

The Ontario Clean Water Agency (OCWA) managed approximately 1,000 different facilities in Ontario, including a preventative maintenance schedule for each facility. However, the current approach had no engineering or scientific basis. There was no reserve replacement fund and in 2009 the Public Sector Accounting Board (PSB) proposed a solution that resulted in incorrect spending forecasts for complex repairable infrastructure because future spending estimates to maintain current asset network derived from prescribed single asset forecasts were 200% of actual needs.

Non-repairable systems had an estimated service life (ESL) and there was typically full cost replacement at end of ESL. For repairable systems, ESL equaled the time to treatment (repair) rather than replacement. Applying non-repairable system logic to repairable system forecasting results in excessive focus on collecting current asset condition to forecast better, excessive focus on populating data fields to create a more unique prescribed lifecycle spending plan, not enough focus on forecasting approach and finally, not enough effort spent analyzing currently available information.

The term “performance” was the fundamental term preferred over “condition”; performance categories were rated as good, fair or poor. Time and money were the two competing forces in performance forecasting. Spending improved asset performance; conversely, asset performance deteriorated without spending.

Prescribed single-asset forecasting did not work for repairable civil/environmental engineered infrastructure systems. Forecasting aggregate repairable systems using consumer-based methodology rather than prescriptive single-asset lifecycle models could produce reliable forecasts. For asset planning, the chosen program was “Infrallect”, which could run forecast scenarios for spending and performance. This could help set long-term spending envelopes and program year-by-year projects.

Questions and Answers

The origins of OCWA were discussed. It was noted that it started out within the Ministry of the Environment and was reinvigorated as a separate agenda of the Walkerton e-coli outbreak. It was recognized that there was a need for qualified, certified operators and OCWA occupied a niche role in

creating career paths for water operators. It was noted that water and wastewater management was so complicated that the possibility of client input was highly unlikely.

It was noted that OCWA's work with First Nations and municipalities was basically the same as they provide professional services to anyone who requested it, including operational services and asset management. OCWA also provided capacity-building training programs for First Nations. OCWA supported twenty-five to thirty First Nations in Ontario.

It was noted that the program, Maximo, did not require an overly sophisticated work management system and installing it within Access would allowed OCWA to do its forecasting. There was no huge IT component or integration required; it was just all on one spreadsheet.

There was a discussion on First Nations tracking of their operations and management costs and it was noted that some communities that were using their financial system properly could be just as effective in tracking O&M as any technical work management system. Some First Nations were increasingly become skilled at this tracking, while some needed to make improvements.

OCWA's typical operations manager operated ten to twelve small facilities through a hub-and-spoke model. OCWA teams go out into the field into First Nations to actually put barcodes on equipment in the facilities and get everything set up, OCWA assisted First Nations with getting their facilities "Maximo-ready".

North Shore Tribal Council (NSTC) Asset Management Initiative: Phase 2 Planning and Phase 3 Implementation

Presenters: Donnelley Trudeau, Mamaweswen, North Shore Tribal Council, Dean Debassige, Ontario First Nations Technical Services and Dr. Guy Felio, P.Eng.

This presentation outlined Phases Two (Planning) and Three (Implementation) of the Mamaweswen North Shore Tribal Council (NSTC) Asset Management Initiative. Phase Three will be implemented in Fall of 2022. The project applied the OFNTSC First Nations Infrastructure Resilience Toolkit (FN-IRT) to the asset management plans for the communities of the NSTC, building on the two main modules: Data Structure and Sources and Asset Management Plan. The process aligned with the ISO 5500 industry standards, adding to the credibility of the process.

The user guide supported the use of the asset management spreadsheet, which was built on the Alberta Municipal Affairs asset management toolkit and adapted for First Nations use. There had been further enhancement of the spreadsheet through the NSTC-OFNTSC asset management initiative. The Asset Conditioning Report System report of 2019 and the Tangible Capital Asset Register were the most important for asset inventory.

Individual Asset Replacement Forecasts (ARFs) could be automatically calculated by spreadsheet on needs (capital replacement and O&M) over a 20-year period for each asset in the inventory. There were tabs for buildings, residential, public works, road, bridges and fleet. Some fields could be customized by a First Nation based on its experience and knowledge of the asset's performance (i.e., general life expectancy, percentage of total capital replacement cost).

It was noted that the key activities of Phase Three implementation would include supporting NSTC communities through continuing asset management capacity development and enhancement through online courses and regional workshops. This would be followed by the drafting of the first iteration of an asset management plan for each community.

Questions and Answers

There was discussion on the Cost Reference Manual (CRM) and it was noted that since it remained in draft form since 2012 the decision was made not use it. However, it was further noted that it was important to obtain the best possible data from the Tangible Capital Assets Register and the PSAB3150 data, particularly the capital cost replacement values. The Conference Board of Canada was approached in an effort to obtain that data.

There was a question on why government data was relied up given that theirs was usually outdated and if First Nations' own data was considered. It was mentioned that the financial systems being used did not track O&M for individual assets. Operations were significantly different from maintenance; therefore, tracking these differences needed to start.

One lesson that was learned was that one could not take all these reports, give them to employees and say, "Create an asset management plan". Buy in was needed, there had to be engagement of all those responsible for O&M. It was a process that could not be done externally and then simply handed off to a First Nation.

There was comment from a participant that it was fortunate that NSTC was able to create these documents for the NSTC communities, as the capacity was not after there at the community level.

There was a question on if the NSTC had a dedicated asset manager coordinator or would this be a new position that should be there. The response described the importance of a community's asset management champion. This person streamlined the process of information retrieval or provided new information as needed.

A participant commented that the capacity issue had often been raised with ISC in any reporting that was done with them. An individual with an asset management skill set that would merge well with the project, an individual that could simply even manage data effectively would be beneficial.

It was suggested that ISC should be approached by a First Nation once an asset management plan had been developed with a request to have support to have the full costs accounting and full cost recovery. ISC should be supporting First Nations that were embracing asset management and doing the work needed to protect the life of the assets. This would represent a win-win situation for ISC and for the First Nation.

It was noted that when engagement was gained from First Nations and the tools they needed were developed, there must be individuals that knew how to use those tools. The role and responsibility of the previously mentioned asset management champion must be determined. The resources must be provided so this work could be sustained. These were the messages that NSTC must send to ISC.

A presenter commented that in order to achieve full cost accounting and full cost recovery, a community must make it known as to what had already been obtained and what was needed and it must be costed out. This was the basis of asset management.

Infrastructure Canada Funding Initiatives & Climate Resilience

Presenter: John Cuddihy, Infrastructure Canada

This presentation described how through immediate and long-term investment, Infrastructure Canada was working in partnership with other federal organizations, the Assembly of First Nations and First Nations to close the infrastructure gap in First Nations communities by 2030. The current provincial/territorial programs were the Investing in Canada Infrastructure Program (ICIP) and the Canada Community-Building Fund.

More direct Infrastructure Canada programs were available to support climate change resilience in First Nations communities. Infrastructure Canada was also committing to improving access and participation for First Nations by increasing cost share to 100% for eligible projects. Also, new and renewed direct application programs have a minimum 10% funding floor for Indigenous applicants. Infrastructure Canada was enhancing how Canada supports resilient infrastructure and communities.

Infrastructure Canada was seeking Indigenous climate leadership, at the community level, to inform new initiatives that best support communities in integrating climate resilience considerations into planning and work. Asset management practices could serve as a strong foundation for integrating intergenerational planning into investments into infrastructure, recognizing the impact of climate change. Open-access climate toolkits to help develop projects that take climate change into account was a 2021 Mandate Letter Commitment.

The AFN participated in the development of the National Adaptation Strategy (NAS). This strategy presents an opportunity for resilient infrastructure. Among other things, it will establish priorities for collaboration, create governance and implementation mechanisms and design federal, provincial action plans and Indigenous Climate Leadership.

The AFN established Five Expert Advisory Tables, each with a different focus or concern. Each Table issued a report summarizing their advice, stating a transformation goal and listing medium-term objectives.

Questions and Answers

A participant questioned why there was not more of a Nation-to-Nation relationship regarding the funding of Indigenous projects through the provinces and territories. An additional question was on how Canada had been ensuring there was regional equitability in some of the new programs. The response described an evolution in terms of the recognition that investment under the terms of the Invest in Canada program was not equitable and there were challenges, particularly with how the provinces and territories prioritized funding and the relationships they have with First Nations. There have been discussions on how to reduce barriers for First Nations with applying. The presenter stated that the Government of Canada took very seriously the Nation-to-Nation relationship and other discussions have focused on advancing that. It was mentioned that Infrastructure Canada's funding had not been intended as base funding but rather as policy-directed funding. It was recognizing the need for Nation-to-Nation relationship renewal and fiscal relationship renewal on that interaction.

There was discussion on the positive development of new programs being targeted specifically to First Nations, and no other party than Canada need be approached, likely thanks to the AFN's advocacy. However, one issue that still remained was with O&M funding, as this had not been included in the new programs and both ISC and Infrastructure Canada claim that O&M was not their responsibility. It was mentioned that First Nations could not be expected to provide that funding.

The presenter said the thinking was more about how to broaden and diversifying funding sources. The goals was to bring in private sector players who were able to invest because they see their benefit in it as well. Infrastructure Canada would not be looking to First Nations to “drum up their share”; that was not what this was about.

There was discussion on the O&M issue, and while no commitments were made that Infrastructure Canada would definitely provide it, there was a goal mentioned about having conversations with ISC on innovative ways for such funding to be identified, particularly for isolated First Nations. A possibility was if Infrastructure Canada did provide some capital funding, perhaps ISC could take note and provide an operational line to mirror that funding.

There was discussion on the National Research Council (NRC) and it was noted that NRC did not have any specific requirement for First Nation perspectives as the programs being discussed were funded by Infrastructure Canada.

There was a question on a date when projects would be approved for the CICD fund. There presenter did not have the details on that other than intake closed in July 2021 and large number of proposals were received, these were now under review.

A participant asked if there was a formal application intake for the National Infrastructure Fund. The response indicated that information on that would be announced in the near future and no specific intake process had been identified.

Housing Study

Presenters: Dan Gaspe, Assembly of First Nations, and Dr. Helaina Gaspard, Institute of Fiscal Studies and Democracy

This presentation was on how the AFN was viewing housing through various lenses, while maintaining key principles. One of the most important ones was that the First Nations were the ultimate decision-makers when it came to housing. The AFN's work in housing was based on the First Nations view that the Canada-First Nations relationship was set out in the treaties and reflected in Canada's Constitution and the United Nations Declaration on the Rights of Indigenous Peoples. The AFN approach on all matters, including housing, was mandated and guided by Chiefs' resolutions. The National First Nations Housing and Infrastructure Strategy was adopted by the Chiefs in 2018.

In 2018-2019, the AFN coordinated a country-wide gathering of First Nations housing data. When complete, the Institute of Fiscal Studies and Democracy (IFSD) was commissioned to analyze the data and provide a cost estimate of those needs. The report was complete in 2021 and formed the basis of the AFN's pre-budget submission in August 2021. It requested \$60 billion to address the First Nations housing

crisis. Minister Patti Hajdu, Indigenous Services Canada, announced the government's support for the Strategy.

It was mentioned that the role of the IFSD was to help understand the contributions over 50% of First Nations made to the housing survey led by the AFN through the First Nations Information Governance Centre (FNIGC). The purpose and approach was to undertake a cost analysis of current housing gaps and future housing needs of First Nations living in community. Housing policy and planning should be informed by culture and the unique context of First Nations.

Questions and Answers

A participant discussed off-reserve membership that wish to return home but may not be able to due to insufficient housing on-reserve and if those numbers have been incorporated into the data that resulted in the amount of \$60 billion. It was mentioned that the data used came directly from First Nations across Canada that contributed to the survey and how there would be future studies where the off-reserve numbers could be incorporated. However, it was also mentioned that the economist did run a series of scenarios of off-reserve members returning to their reserves and that these numbers were of particular interest to AFN.

There was a question on the ten First Nations that participated in case studies and if examples could be provided on what that collaboration looked like. It was noted that this collaboration and input was from the Housing Directors of the participating First Nations, via online discussions and each Housing Director reviewed and approved the content of their profiles. The presenter added that inflation was factored into the migration study conducted by the economist.

Vertical infrastructures were discussed. The presenter said that the costs estimates as physical structure along with connecting factors to the home such as water and electricity. The presenters added that the federal government had been under a lot of pressure to put more money into urban and rural Indigenous housing, which captured First Nations, Metis and Inuit. In the Mandate Letter that came out recently to the Minister of Housing, he was given the mandate to develop an urban, rural and Northern Indigenous Housing Strategy. CMHC was leading the effort to assist the Minister and had asked the AFN for details on what its role should be. The AFN did not want to be involved in a pan-Indigenous fashion but instead the AFN would be recommending that First Nations have a separate table and that the principles in the National First Nations Housing Strategy were respected. One challenge in the process would be defining what "the North" was. It was also mentioned that ISC data was used for the report which determined that \$16 billion would be needed for future needs, while the demographic modelling was from Statistics Canada.

A participant asked how the housing costing estimates were determined. It was mentioned that the costs of repairs and new builds were determined based on the 2018 surveys completed by the First Nations. In terms of how the determinations proceeded, the information was first used on a provincial basis to help capture regional differences; sorting was done by geographic zone as well. The presenters added that reviews were done on what human resources each First Nation had, as this was of particular concern to the smaller First Nations that submitted surveys and how many had to cover staffing from their own-source revenues.

There was discussion on cost estimates in relation to current needs and future focus needs and it was mentioned data on that was included in the second portion of the report; that information was also

available by geographic zone. Migration and future focus needs were also available on a provincial basis with noted extrapolations for non-participating provinces.

It was noted that ISC had an initiative about transfer of housing services to First Nations control. Many regions had taken advantage of that funding to explore the possibilities.

A participant asked if any portion of the study was dedicated to looking at homelessness and how it correlated to lack of housing or lack of access to funding streams for housing. The presenter said that issue merited its own kind of attention but it was raised by First Nations that submitted surveys. This issue could be part of a future data collection exercise. There was mention of transitional housing in some of the surveys. Further, efforts were underway to develop a national strategy on First Nations homelessness. There would be different regional sessions. One significant aspect was overcrowding, or what was known as “hidden homelessness”. The federal government’s “Reaching Home” was being urged to become more accessible to First Nations.

SUMMARY OF CLOSING REMARKS

Mr. Leblanc provided closing remarks thanking the participant for participating in the AFN’s first Asset Management Conference. He thanked all the speakers and presenters for sharing their expertise and for all the participants to asking a lot of questions.

The closing prayer was provided by Knowledge Keeper Charles Hume (YK) and the drum group Spirit Wolf provided a closing song.