Lindsay Hunter: Hello. My name is Lindsay Hunter and I am the project manager for the Integrated Resource Plan (IRP) Development Project. Now that we've gone through the modelling and analysis information, we can look at the preliminary outcomes of the IRP. These are presented as the draft IRP road map and each of the proposed components are reviewed. Throughout the development of the IRP, we have said that the 2023 IRP will result in a road map. This road map is not a development plan, but a representation of the IRP outcomes. It defines where collectively we may need to go and identifies a number of ways we could get there, knowing that we could change direction as the future unfolds. It represents how Manitoba Hydro can navigate a transition from today's energy system to a future energy system and continue to serve customers providing safe, reliable energy at the lowest cost possible, even as customers change their needs and the world around us changes.

The draft road map includes three main components that you see here. It is a collection of learnings, near-term actions, and signposts. Together, they allow us to manage the evolving energy landscape. Let's take a look at these three components. The first of these components is learnings. IRP learnings are fundamental and inform the near-term actions and signposts. They're rooted in studied and documented outcomes. The learnings summarize key insights gained through the process of developing the IRP, including from engagement and customer input and feedback, as well as from modelling and analysis.

The second component are the near-term actions. The IRP is the foundational preparation to respond to a variety of possible energy futures over the next 20 years. The draft near-term actions focus on actions intended for the next two to five years. These actions are the steps that need to be taken now to ensure Manitoba is ready for a range of possible future scenarios. The near-term actions will often need to be completed in collaboration with the Manitoba energy planning community.

And the third component are the IRP signposts. Signposts refer to the policy, market, technology, or customer trends and events that will be monitored upon implementation of the road map. Monitoring signposts enables us to look for trends that indicate how the energy landscape is evolving. Because the evolving energy landscape can change quickly, we will monitor signposts to ensure the drafted near-term actions are still the correct ones to pursue, or if we need to advance, delay, modify, or change the plan. All of these components, learnings, near-term actions, and signposts work together to help us to continue monitoring, preparing for, and responding to the evolving energy landscape. You'll see that the draft road map is comprised of six learnings, five draft near-term actions, and four proposed signposts.

So let's move into the details of the draft road map starting with learnings. Learnings are based on all the work completed over the last 18 months. They come from throughout the IRP development process from such things as engagement, modelling and analysis, customer input and feedback, and government policies. IRP learnings represent the fundamental takeaways from the IRP process. At key milestones throughout the IRP development process, we shared the ongoing work to develop the IRP with customers and interested parties. Feedback heard from this engagement and the customer input and feedback were used to inform the IRP, like how the key inputs and scenarios were established.

This is an overview of the six IRP learnings and each learning builds on the previous. I'm going to first review these here together. Then we will look at each in more detail. The first learning is that the energy transition is underway in Manitoba. The work completed over the last 18 months confirms this assumption. The second learning is how critical managing this energy transition will be to continue ensuring safe, reliable, and low cost energy. The uncertainty in the pace and timing of change results in a wide range of related costs, Greenhouse Gas (GHG) emissions, and resource mixes. Managing this uncertainty through careful consideration of the timing, type, and pace of future decisions is critical to ensuring the best value for all Manitobans.

Learning three speaks to the fact that even with this uncertainty, in every scenario, there was significant investment needed due to the evolving energy landscape. Learning four reflects the modelling and analysis results that show some of the investment needs can be mitigated through the strategic use of natural gas while still enabling reductions in Manitoba's greenhouse gas emissions. Learning five is the recognition that the many common findings from the modelling and analysis point to where some of the best future decisions can be made, particularly for an accelerated energy transition. And learning six is that the decisions we make after implementing decisions based on the common findings are going to be much more complex.

So the first learning again is that we now have the data to know that the energy transition is happening in Manitoba. We learn some customers are taking steps to decarbonize their current energy sources, not necessarily because they're mandated to do so, but because their business decisions are supported by other drivers such as environmental, social, and governance goals. These are customers already in Manitoba, and we know there are others expressing an interest in moving their business to Manitoba because of our energy advantage. As certain as we are that the energy transition is happening, we also learned there is still much uncertainty in the energy transition, including the pace of change. Given the uncertainty, energy planning needs to consider broad ranges of scenarios, including pathways towards net-zero. We will need to be agile in managing the energy transition.

Decarbonization was a focus in all scenarios. The reduction of greenhouse gas emissions through decarbonization is not limited to just the electricity sector. It is much broader and includes other sectors such as space heating and transportation. We learned that should decarbonization of all sectors be pursued at an accelerated pace, bringing new resources into service in time to meet the higher demand for electricity is expected to be challenging in the early years.

The second learning centers around the need to manage the energy transition through careful consideration of future decisions. The IRP modelling and analysis looked at a range of possible futures, given the uncertainty in the evolving energy landscape and found many different ways to address the change. The IRP considers existing and potential policy for all levels of government, including federal, provincial, and municipal. We learned that energy policy will be one of the greatest influences on the pace of change, particularly for decarbonization. Consequently, energy policy can be used to manage the pace and impact of change. We also learned that as we navigate the uncertainty in the pace of change, energy planning will still need to consider broad ranges of future scenarios, including pathways towards net-zero to ensure agility in managing the energy transition.

Engagement was a key to the success in developing the IRP. The feedback and input heard helped inform the IRP outcomes with an understanding of the Manitoba context. We learned continued conversations will still be needed, and as we move forward, there is a role to play for the broader energy planning community within this energy transition. We are defining the energy planning community as those who work with and influence energy planning, such as Manitoba Hydro, governments and regulators, Efficiency Manitoba, and interested parties, including customers and Indigenous peoples and communities. There is an opportunity to work collaboratively with all parties in the best interests of Manitobans.

A key learning from the IRP modelling and analysis is that a significant investment to support future energy needs is required for all scenarios and sensitivities. This investment is needed for both Manitoba Hydro and customers and is in addition to investment needed to maintain existing infrastructure. All IRP scenarios result in increased winter peak demand of up to two and a half times current demand, which means there is a need for new electricity generation, transmission, and distribution infrastructure. The modelling and analysis demonstrate that increasing levels of decarbonization results in increased costs. Scenario and sensitivity net present value results range from approximately 11 billion to nearly 26 billion dollars. We also learned that meeting this increased demand can be achieved in many ways. There are many technologies or strategies that could be used. We won't have to just pick one or two, but can use several to support future energy needs. That said, some of these options are proven while others are at less mature stages of development and may not have been tested in the Manitoba context.

Another key learning is that strategic use of natural gas assets are an integral part of the energy transition in Manitoba. As one of the drivers of the evolving energy landscape, decarbonization is not just limited to space heating. Other areas such as transportation are moving to decarbonize their energy sources and electrification of these energy sources increases the need for electricity. We learn through the modelling and analysis that using a dispatchable capacity resource, such as thermal generation fueled by natural gas, can manage the impacts of this increased need for electricity. A dispatchable resource can be run infrequently to support peak demand while complementing other non-emitting energy resources like wind.

While generation emissions do increase using natural gas thermal generation, overall it still supports a significant reduction in GHG emissions in the province. Specifically for space heating, the modelling and analysis results show that assumptions of decarbonization of space heating through electrification have a significant impact on winter peak demand. However, in an aggressive decarbonization scenario, the dual fuel sensitivity results showed that this technology may be a cost effective means of reducing Manitoba's emissions because it can avoid some of the costs associated with new electricity resources. Continuing to leverage the past investments in the natural gas system allows for other gaseous fuels to be used in the system.

As noted before, there are consistent observations across scenarios. These are the findings that survive changes in assumptions and inputs when looking at different sensitivities of the scenarios. While investment is required to meet the evolving energy landscape, most energy will still come from existing electricity assets. In learning four, we established the need to leverage the existing natural gas assets, not only for continued space heating requirements, but also for new electricity generation. So a common finding is that continued investment in these and other existing assets is necessary.

We also learned wind generation is a cost effective future choice for energy. It was a common resource present in the scenario and sensitivity results. However, wind and other variable renewable energy resources must be paired with a dispatchable capacity resource to reliably meet the increasing electricity needs of customers. When investigating energy efficiency measures, the common finding is that those that reduce peak electrical demand, reduce electrical system costs much more than those measures that reduce energy with little effect on peak demand.

In line with the first point on the slide, enhancements to existing hydropower assets are cost effective as compared to other resources. Existing hydropower enhancements are part of the resource mix in each of the scenario sensitivity results and are selected before other resources. There were also common findings for resources that were not selected. New hydropower generation is only cost effective in extreme sensitivity conditions. Solar resources cannot reliably meet Manitoba's winter peak demand. Other resources are needed instead that can meet both peak demand and can also be used for off-peak demand.

The final key learning is that future decisions needed after implementing the common learnings are going to be much more complex. The common learnings reflect more proven technologies like wind and hydropower enhancements with better understood decisions. Once we move beyond those, the focus turns to decisions based on more complex considerations. Analysis of potential options in the future is going to have to be much more complex. This time around based on Manitoba Hydro's mandate, analysis focused on identifying utility based least cost options to meet the evolving energy landscape. Going forward, it will be necessary to continue to consider cost, emissions, impacts, and reliability, but also other factors such as environmental, climate, economic development, and social considerations. Trade offs between these complex considerations beyond utility-based costs are necessary to best meet the needs of Manitobans.