

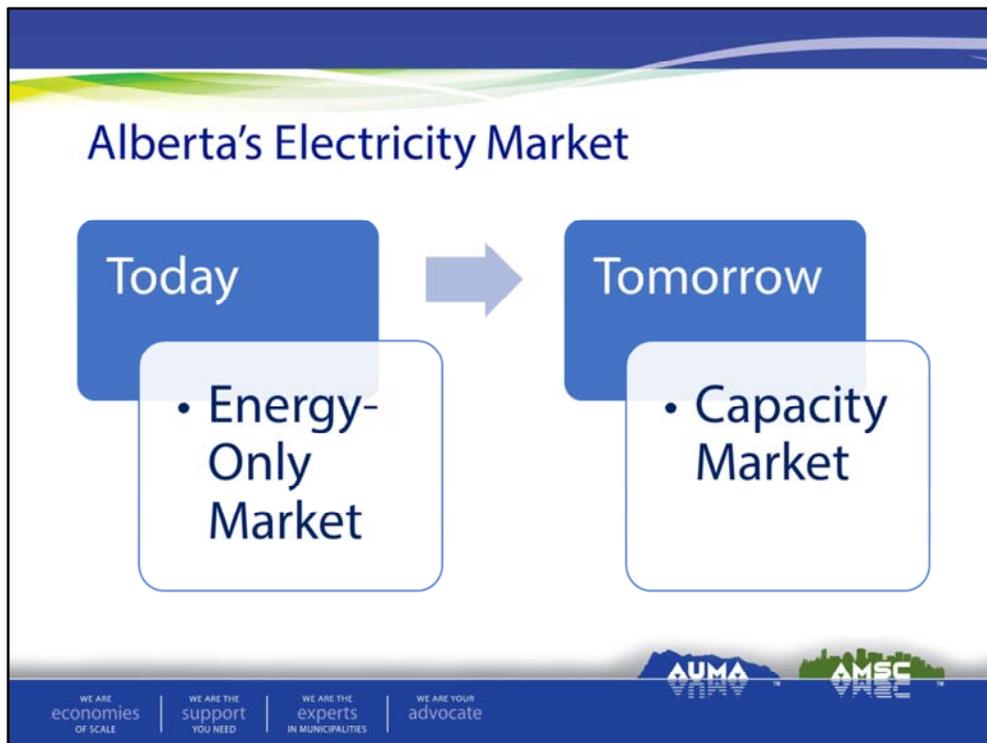
The banner features a top section with abstract green and yellow wavy patterns. Below this is a dark blue horizontal band containing the title "Modern Electricity Market" in white. Underneath the blue band is a white section with the subtitle "March 2017 Mayors' Caucus" in blue. The bottom of the banner is a dark blue footer containing four columns of text and two logos on the right.

Modern Electricity Market

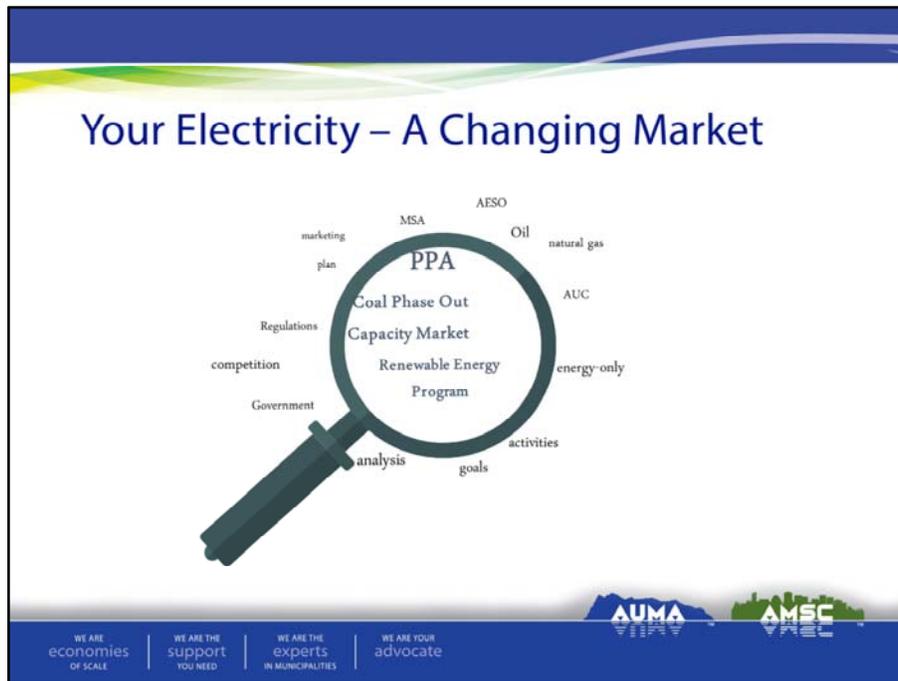
March 2017 Mayors' Caucus

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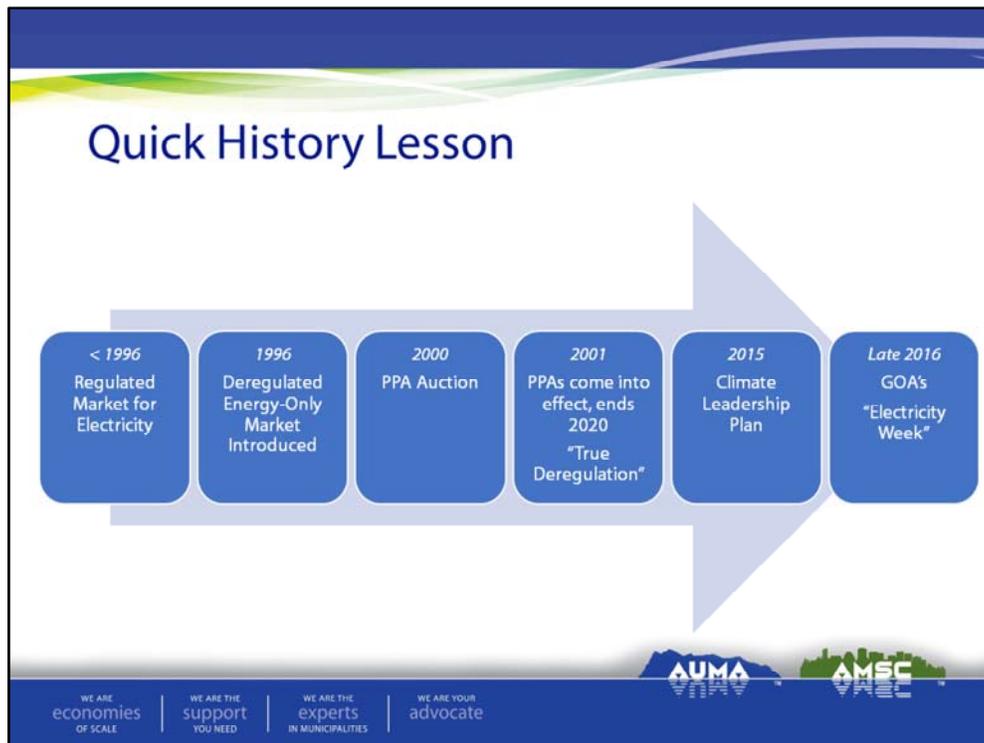
AUMA AMSC



- As Alberta's electricity system has been undergoing significant changes as a result of climate change policies and other regulatory shifts by the province, we thought it would be beneficial to give you an update so you can understand how your municipality and your citizens will be impacted.
- You may have heard in the news that Alberta is moving from an energy market to a capacity market but I suspect very few of us actually know what this means.
- So we have invited AUMA's Senior Director of Utility Services, Alvin Law, to give us a plain language overview of what these changes are about and what the province means when it says we will have a Modern Electricity Market.
- Once Alvin has completed his presentation, we'll open the floor for questions.

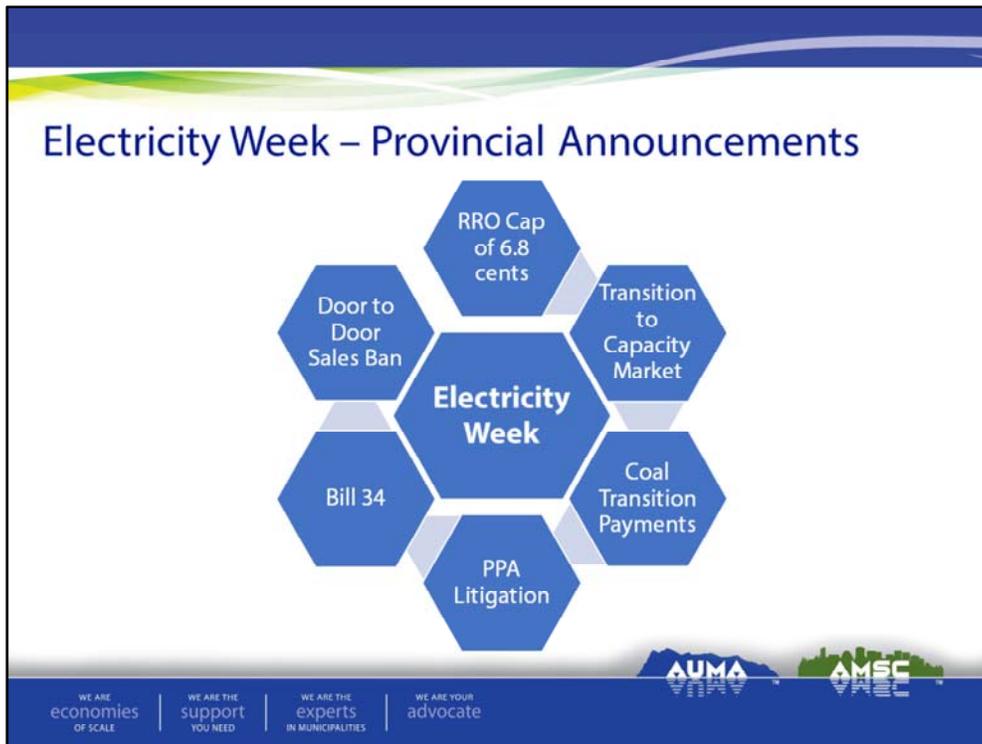


- Many of you have heard of terms such as Power Purchase Arrangements, the Coal Phase-Out, and the Energy-Only to Capacity Market transition. Some of you may be quite familiar with these terms and have strong opinions about it.
- This presentation is not intended to assess the direction nor debate the merits. Rather my intent is to provide you with the facts, the information, and ensure all of you are equipped with a basic awareness about what is occurring around you when it comes to the electricity - that is so critical in your daily lives.



- Prior to 1996, the electricity market in Alberta was regulated. Generating companies received a regulated price that covered their costs plus an approved rate of return. Construction of new power plants required approval from the Provincial Utility Board based upon need.
- In 1996, Alberta's electricity policy changed. The Province started restructuring the electricity market from the traditional regulated model to a market based model. This is a model whereby generating companies compete for the right to sell energy into the market at competitively determined prices. Investors take on the financial risks associated with the construction of new power plants. The Alberta Electric System Operator (AESO) was established by the Province to manage and operate the provincial power grid.
- Within this revised model, both the transmission and distribution of electricity was still kept as regulated components.
- In August 2000, the Province began to auction off Power Purchase Agreements (PPAs) as a method of redistributing output from the previously regulated generating units, to private industry.
- These Power Purchase Agreements (PPAs) came into effect in January 2001. Start of a true deregulated market.
- Alberta Climate Leadership Plan introduced on November 22, 2015.
- Direction was set to ensure that no coal fired emissions from electricity plants would occur after 2030. The Climate Leadership Plan also provided direction to further develop renewable energy. The Alberta Electric System Operator has started the process to develop 5000 MW of renewables by 2030 under the Renewable Electricity Program through a competitive process. Details of this program are available on the AESO's website. Both of these components, directly impact the fundamental structure of the electricity market
- Through a series of announcements, the Government of Alberta provided a good signal as to the underlying strategy behind their redesign of the electricity market. Some in industry have termed this "Electricity Week."

Electricity Week – Provincial Announcements

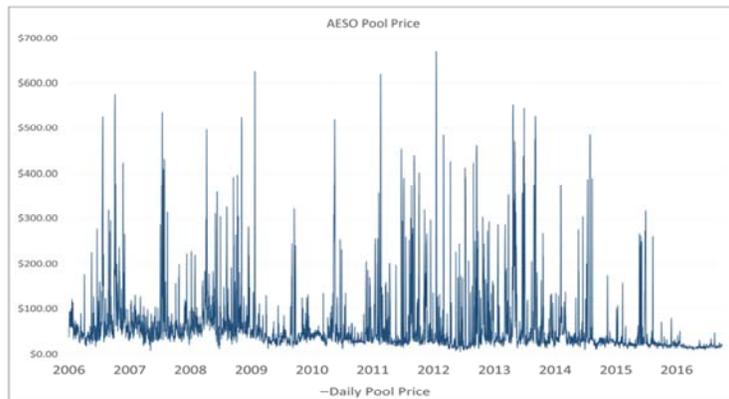


- Government announced that they will cap power rates at a maximum of 6.8 cents/ kWh or \$68/MWh beginning in June of this year for all Regulated Rate Option or RRO consumers.
- The Regulated Rate Option (RRO) is a form of energy supply available for people and organizations who use less than 250,000 kilowatt hours (kWh) per year, primarily intended for residential, small commercial/institutional users and farms, or what is termed a “consumer.” In place for a 4 year period until 2021, this cap only relates to the power being used and does not affect the regulated fees such as distribution or transmission.
- The next day, the government announced the Electricity Transition. Hold, until the next slide.
- Government also announced that agreements had been reached with ATCO Power, Capital Power and TransAlta regarding the coal phase-out. This was in support of government’s direction to phase out coal-fired emissions by 2030 under the Climate Leadership Plan.
- As a result of the direction to phase-out coal, several generating companies and their investors were left with stranded capital. This meant that 6 coal plants with intended retirements as late as 2061, were now being forced to retire early, removing their ability to recover their capital costs.
- As recommended by the Coal Secretariat and approved by government, agreements were reached with ATCO Power, Capital Power and TransAlta to provide for annual transition payments totaling \$1.1B - fully funded by the money collected from industrial carbon emissions. These transition payments are intended to mitigate the economic disruption faced by these companies as a result of the coal phase-out while building investor

confidence. The Province continues its work on consulting with affected municipalities through the Advisory Panel on Coal Communities.

- That same day, another announcement was released with regards to the Power Purchase Arrangement (or PPA) Litigation. The government announced that settlement had been reached with Capital Power while tentative agreements had been reached with AltaGas Ltd. and TransCanada Pipelines Corporation.
- Through this announcement, the Province confirmed that it would discontinue its litigation and the Balancing Pool could accept the return of the returned Power Purchase Arrangements in exchange for these companies accepting losses attributed to low electricity prices. Through this settlement, the Balancing Pool is now holding many of these PPAs.
- Bill 34 – The Electric Utilities Amendment Act. This bill is structured to help manage the financial impact of holding the Power Purchase Arrangements by allowing the Balancing Pool to borrow money. In conjunction with Ministerial Orders, the Balancing Pool would be allowed to borrow money and minimize its charge on electricity invoices by paying its obligations over a longer period of time.
- Last announcement was primarily focused on the residential sector. As of January 1, 2017, Alberta prohibited unsolicited door-to-door sales of energy products, including furnaces, natural gas and electricity contracts, water heaters, windows, air conditioners and energy audits. Energy companies can still sell these products by telephone, online, at kiosks or through traditional advertising. The prohibition only applies to household energy products.

What is an Energy-Only Market?



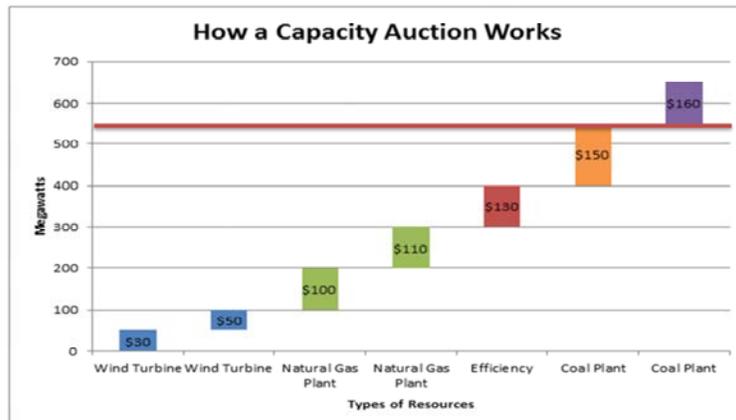
Source: eia.aeso.ca

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- An energy only market is where companies who generate electricity compete with each other for the right to sell their power, and to obtain sufficient revenue to cover costs and earn a return.
- The advantages of an energy only market are that they have a simple structure, it promotes innovation, and supports competitive pressures in electricity generation driving down costs.
- Additionally, investment risk is fully borne by private investors rather than tax payers.
- The disadvantages are the high degree of revenue uncertainty for generators, cost uncertainty for energy users, high price volatility and the potential for lower reliability because investment in supply is strictly determined by market forces.

What is a Capacity Payment?



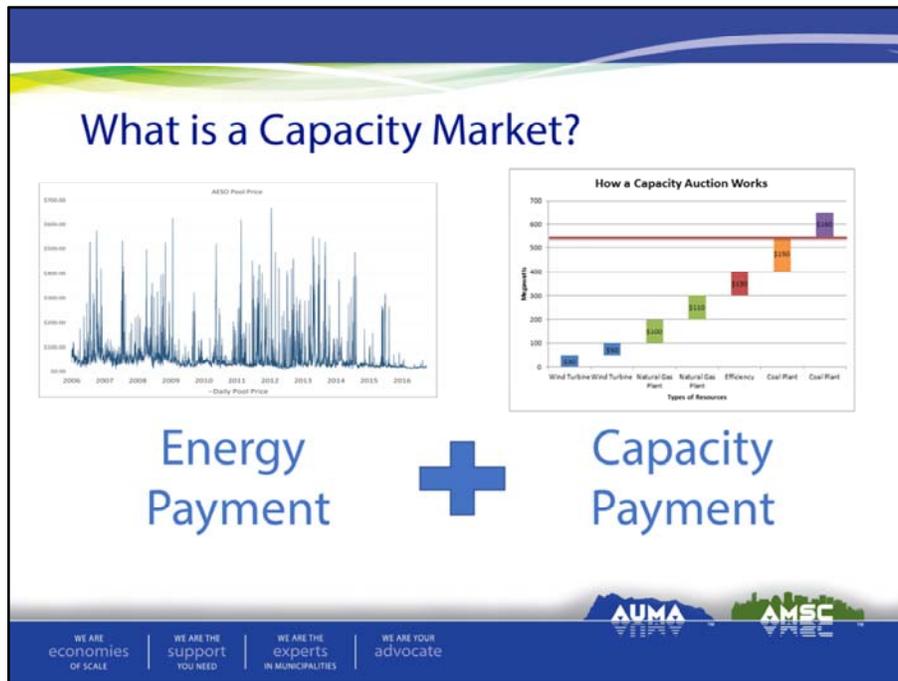
Source: theenergycollective.com

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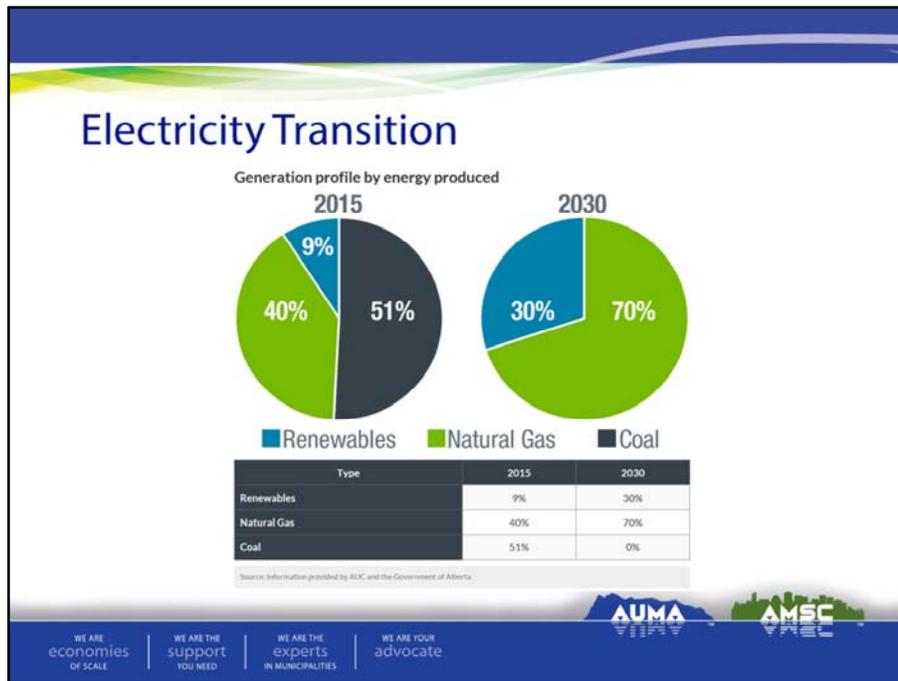
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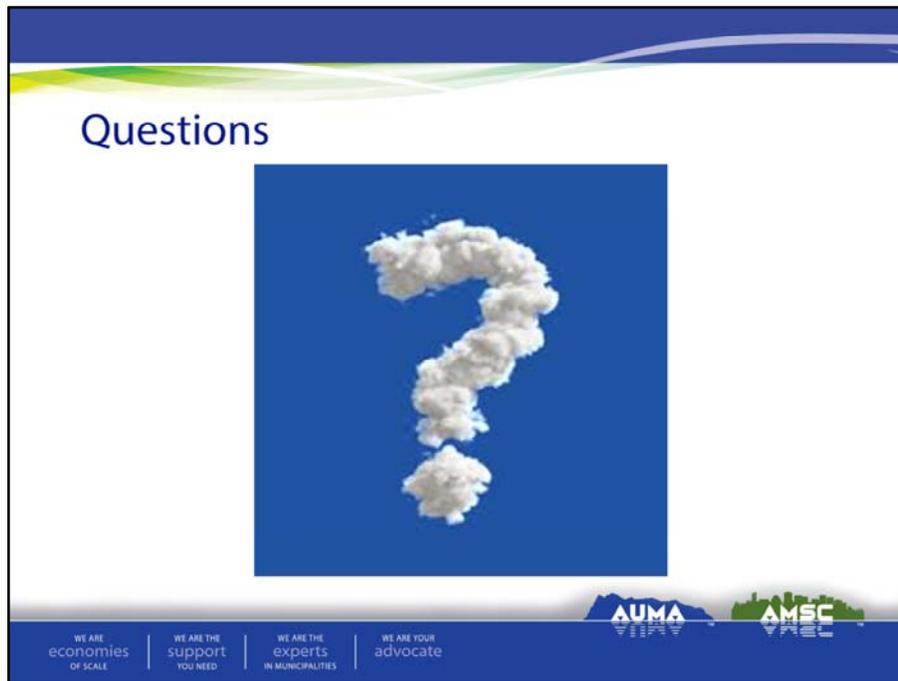
- Capacity is the availability to generate power, rather than the supply of power.
- In a very simplistic example, this slide shows a capacity stack, all of the bids from various power generators who are committing to make power available are lined up from lowest priced to highest priced.
- The demand is then plotted and intersects at the clearing price. This determines the capacity payment.



- By combining the energy payment and the capacity payment, you have created a very simple interpretation of a capacity market.
- A power generator receives two payments. The capacity payment provides certainty, typically to cover capital costs and other fixed costs, whereas the energy payment provides revenue to cover variable costs.
- By providing certainty in revenue through a capacity payment, you should expect volatility to decrease on the energy payment side. Generators no longer rely on the high priced periods to cover capital costs, rather relying on the steady stream of capacity payments.
- This is the model that the government has directed for Alberta.



- The Government of Alberta announced that our province will be transitioning to a capacity market by 2021.
- By shifting the benefits that generators receive from brief periods of high prices into stable capacity payments determined by competitive auction, the government is aiming to 1) reduce price volatility 2) provide increased certainty for the recovery of investment costs, 3) ensure adequate long term supply 4) drive efficient use of the existing transmission system and 5) enable a smooth transition to cleaner power.
- With this policy direction set, the Alberta Electric System Operator (AESO) has been tasked to design the details.
- This transition is expected to take place over the next several years with the first competition for capacity being awarded as early as 2019.
- Extensive market design consultations are taking place throughout 2017 and AUMA is participating in this process.



- Before we get into questions, I just want to emphasize that we will have more time later today and tomorrow to discuss other aspects of Alberta’s Climate Leadership Plan and AUMA’s advocacy for municipalities to receive a rebate of the carbon levy, for the province to rethink its approach to coal closure and for the province to provide support for communities as they transition to a low carbon economy.
- Now, do any of you have questions about what Alvin just covered?