Pricing framework review

February 12, 2020

Welcome

- Refreshments available outside the room
- Please sign in at registration table
- Wi-Fi Network available

About the AESO

Connect
CUSTOMERS

PLAN
transmission

Operate the
GRID

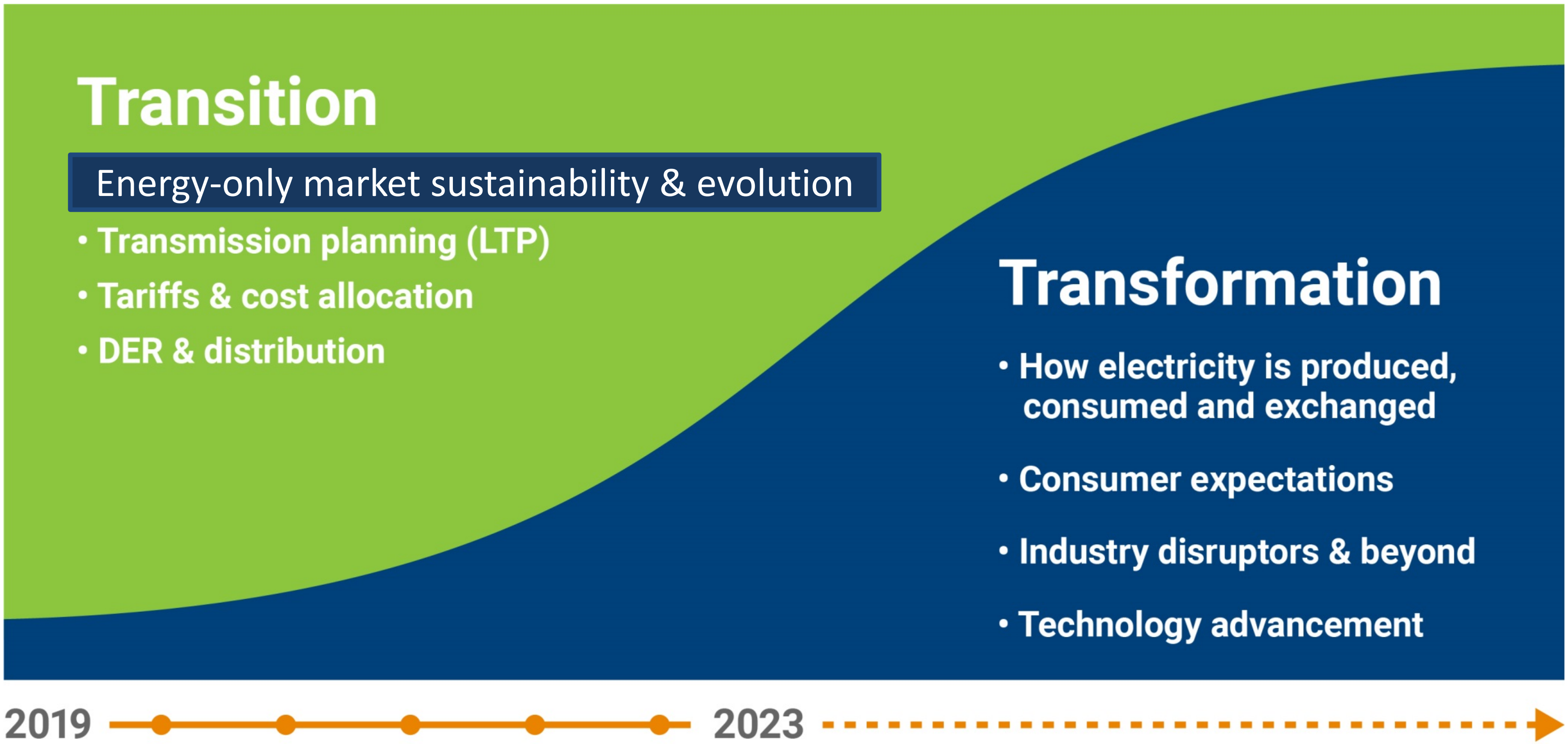
Plan and Operate the
MARKET

AESO mandate

- Responsible for safe, reliable, economic planning and operation of Alberta Interconnected Electric System (AIES)
- AESO is a not-for-profit, statutory corporation; independent of government and industry:
  - Governed by independent board appointed by Minister of Energy
  - Must operate in the public interest
  - No financial interest in any generation unit, transmission or distribution infrastructure
  - No government funding; costs recovered from Alberta ratepayers

AESO Stakeholder Engagement Framework

Transition to transformation



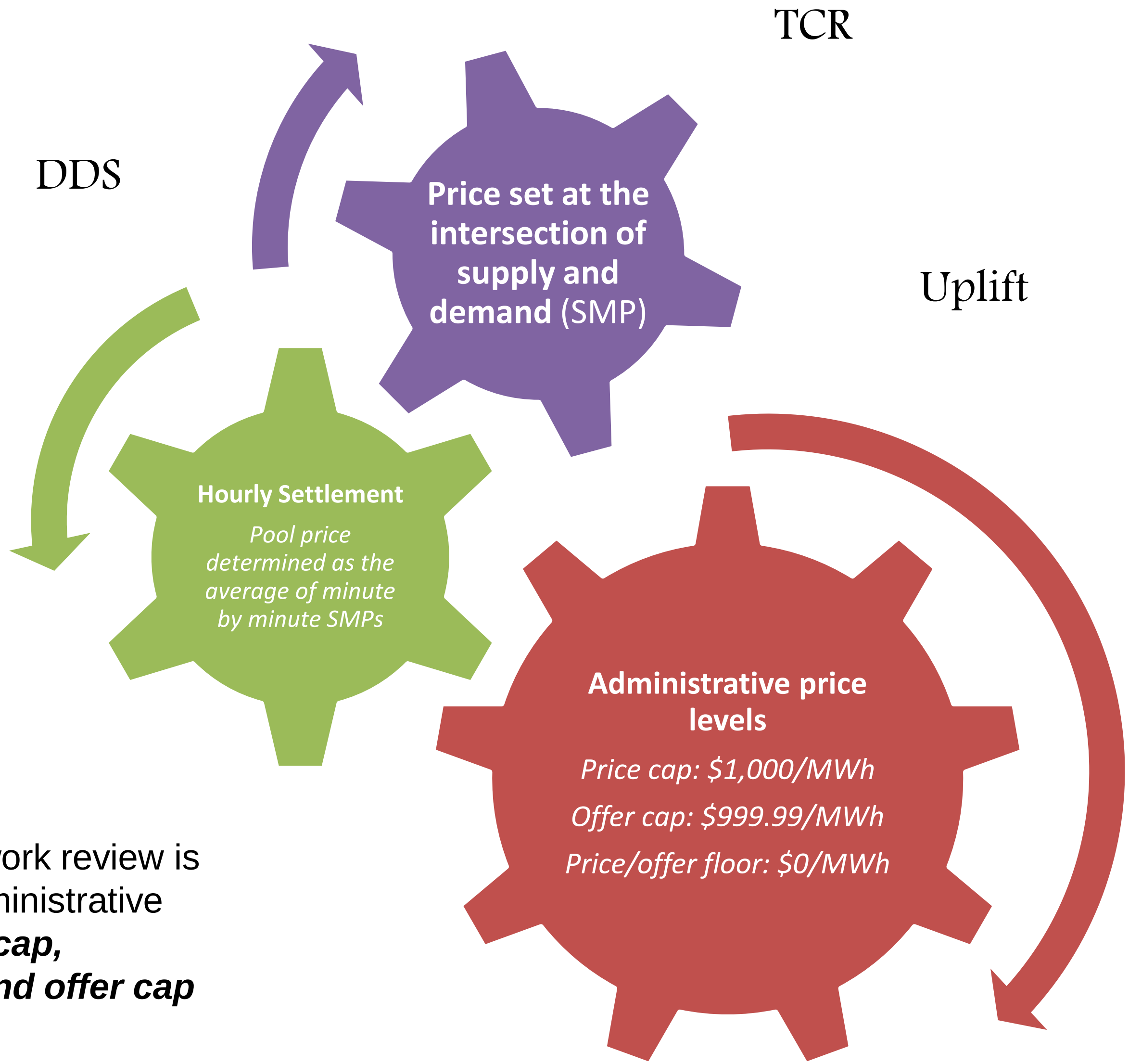
Agenda

- Background
- Pricing framework overview
- Introduce direction and approach to reviewing the pricing framework
- Discuss fundamental changes from 2016 to now
- Review effectiveness of price signal in ensuring revenue sufficiency and long term adequacy
- Discuss next steps

Background

- The sustainability and efficiency of the energy pricing framework is currently under review
- The review was originally planned as part of the market roadmap initiative, contemplated during the capacity market
- In its July 25th, 2019 letter, the Alberta Government requested the AESO to provide a recommendation on the pricing framework, in particular if changes are required to the price cap/floor by July 31, 2020

Alberta's energy pricing framework



The pricing framework review is focused on the administrative price levels: ***price cap, price/offer floor and offer cap***

Objectives of Alberta's pricing framework

Energy pricing framework should ensure efficient and effective signals are provided to promote the following:

- Long term adequacy: through providing clear transparent signals on the need for capacity, and revenue sufficiency with reasonable expectations of recovery of capital and return on capital
- Efficient short-term market response: involves ensuring that the pool price creates the right signals for the market and administrative price levels do not hinder these signals, including:
  - Provide short term price signals to encourage flexibility and response from both supply and demand resources;
  - Provide self-commitment decision signals, and also provide a mechanism for the recovery of start-up and cycling costs;
  - Provide the signal for participants to import or export.

Process

Problem/Opportunity identification

(Long-term adequacy assessment, short-term market response evaluation)

Options identification

(Identification & assessment of pricing framework alternatives)

Recommendation to GOA

July 31, 2020

Scope

In Scope	Out of Scope
• Evaluate the effectiveness of the pricing structure, in particular the price cap, offer cap and price floor, in maintaining future supply adequacy • Review the efficiency of the short-term market response • Develop and assess pricing framework alternatives • Conduct stakeholder engagement to review AESO assessments and solicit feedback • Prepare and deliver to the government a recommendation on the pricing framework by July 31, 2020	• Market power mitigation (MPM) – for the purpose of this assessment assume no change to the MPM framework unless pricing framework option warrants change • Implementation of pricing changes – scope to be identified following recommendation • Other related initiatives (ancillary services, tariff price signals, and sub-hourly settlement, etc) – being led through other streams. • Market restructuring (SCED, SCUC, BDAM, co-optimization of energy and OR) - beyond the scope of review • Resource adequacy threshold per ISO rules section 202.6

Stakeholder engagement

- The objective of the stakeholder process is to test AESO's approach in meeting government direction with industry
- The intent is to ensure that this process is aligned with the stakeholder framework:
  - Principle 1: Inclusive and Accessible
  - Principle 2: Strategic and Coordinated
  - Principle 3: Transparent and Timely
  - Principle 4: Customized and Meaningful
- AESO will seek written and verbal input from stakeholders on key questions and topic areas
- Input provided by stakeholders will be taken into consideration by the AESO – all input will be made public on AESO's website

Format and timing of engagements

- There will be 3-4 stakeholder engagement sessions
- Materials will be provided in advance of each session
- Comment matrices will be posted after each session, with 10 business days to respond

Session 1: Feb. 12, 2020	Session 2: Late March 2020	Session 3: Early May 2020
• Introduction to process • Overview of pricing framework • Review effectiveness of price signal in ensuring revenue sufficiency (historical & future)	• Recap previous session • Review efficiency of short-term market response during shortfall/surplus conditions • Identify where changes should be considered • Discuss alternative pricing approaches and pros and cons relative to the status quo, and need for change	• Recap previous session – discuss stakeholder comments • Share any new analysis – stakeholders or AESO • Discuss AESO's next steps in forming the recommendation for the government

Purpose of Administrative Price Levels

Offer Cap, Price Cap and Price Floor

Purpose of offer cap

- Offer cap protects consumers
  - May help address potential market power issues resulting from concentration of generation ownership and relatively inelastic demand for electricity - a form of market power mitigation
- Allows suppliers the ability to reflect their variable operating costs
- In the current Alberta structure, allows for reasonable opportunity to recover fixed costs over the long term
  - Mechanism for ensuring supply adequacy

The offer cap should provide a reasonable opportunity for the marginal generating asset to recover its fixed costs over the long term, and in the short term not prevent a resource from recouping its variable costs

Purpose of price cap

- Limit excessive wealth transfer from consumers to producers
- Incent efficient demand response during shortage events
- Incent efficient supply response during shortage events
- May also provide an administrative mechanism to allow for a portion of fixed cost recovery

Efficiency issues may occur if prices cannot reach levels sufficient to reflect the shortage of supply or the willingness-to-pay of demand

Purpose of price floor

- The level of the price floor can help to mitigate risk to producers of sustained negative pricing
- The price floor should allow for efficient pricing during supply surplus events

Efficiency issues may occur if the price floor impedes the ability of market based clearing in supply surplus events

What would potentially warrant a change?

- Offer cap:
  - Lack of revenue sufficiency and generation investment to meet the resource adequacy threshold (specified in ISO rule section 202.6)
  - Demonstrated costs greater than the current level
  - Excessive supplier rents
- Price cap:
  - Price level is a barrier to efficient clearing during shortage conditions
    - an increase in price cap could encourage more response from load or generation resources (demand response, imports, long lead time assets, generator returns from outages)
  - Lack of revenue sufficiency and generation investment to meet the resource adequacy threshold (specified in ISO rule section 202.6)
- Price floor:
  - Price floor is a barrier to efficient clearing during surplus conditions
  - An increase in expected future surplus events

- Note that there are interdependencies between each of these pricing elements, and they must be taken into consideration as a whole when reviewing the pricing framework

Are the existing administrative levels creating inefficiencies and what is the urgency for change?
How robust are the current levels over time?

Questions?

Resource Adequacy Assessment

Market Revenue and Reliability Assessment

- The AESO has performed various resource adequacy assessments in the past – notably in 2011, 2013 and 2016, which was prior to the capacity market design, and more recently Q4 2019
- Key goal of the resource adequacy assessments was to determine the following:
  - In the energy-only market design and pricing framework, is there sufficient revenue to support the level of investment to meet resource adequacy threshold as outlined in Section 202.6?
  - Revenue sufficiency outcomes vary under a range scenarios
- The following sections:
  - Compare the fundamental market changes from 2016 to 2019
  - Outline the findings from the most recent resource adequacy assessment completed in 2019

Market Changes: 2016 to Present

Market Changes: 2016 to Present

- In October 2016, AESO released a report that stated that revenue sufficiency would decrease in the future and the AESO recommended that Alberta adopt a different electricity structure to meet its reliability objective for the electricity system
- Reliability concerns arose from the ability to develop enough generation to compensate for the “coal retirement cliff” combined with strong load growth
  - Further challenged by mandated pace and magnitude of renewables development
- Load growth expectations were higher in 2016 than present
- Uncertainty regarding carbon policy stalled investment, and rendered coal-to-gas conversions uncertain

Coal Facilities & Investor Confidence

2016	Pre-June 2019	Post-June 2019
No coal by 2030 and coal-to-gas conversions uncertain	No coal by 2030	Increased certainty of CTG conversions/Co-firing • CPX spending $70MM to have G1-3 fully capable to run on gas by 2021 • BR and SH complex continue to move forward with co-firing • TA purchased two frame units for $84MM to repower SD5 as a 730MW CC unit by 2023 • TA announced SD6 conversion in 2020, KH2 & KH3 in 2021 • TA received first gas from the $100MM Pioneer Pipeline at the KH/SD complex Suncor announced major cogeneration additions Several renewable facilities announced

Carbon Policy

2016	Pre-June 2019	Post-June 2019
Carbon Policy recently changed from SGER to CCIR	Provincial TIER regulation in the works, Federal equivalency uncertain	Carbon pricing firmed up via TIER creating certainty for: • CTG conversion economics • Cogeneration

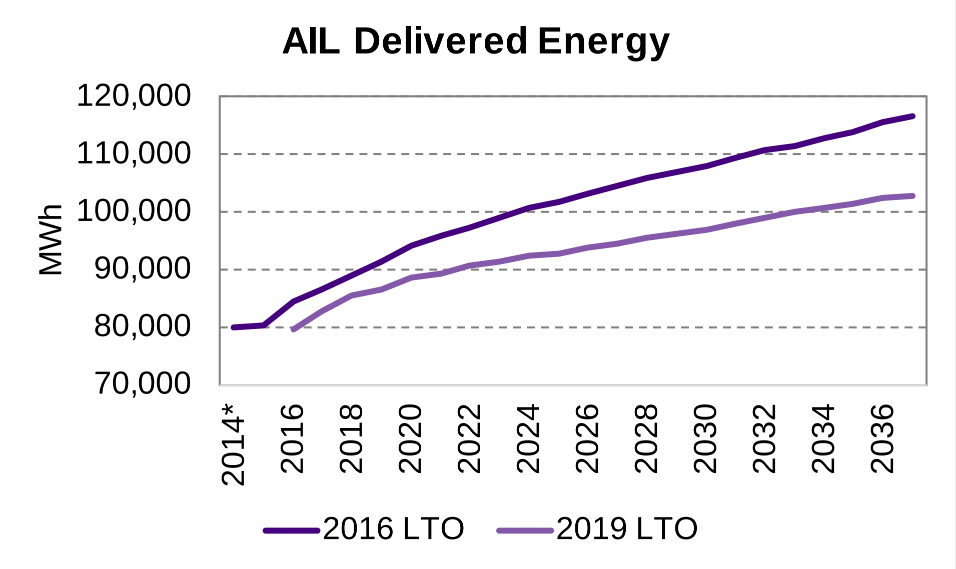
- Federal acceptance of Alberta’s TIER Regulation provides clarity to cogeneration, coal-to-gas conversions, and renewable developments

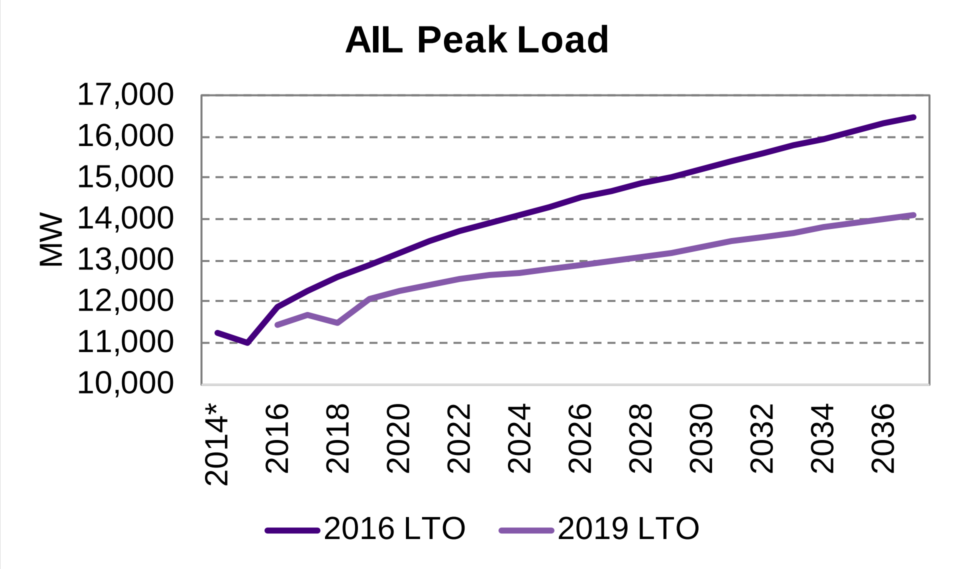
Renewable Policy

2016	Pre-June 2019	Post-June 2019
Forecast 4,200 MW renewables additions by 2030	Forecast 5,850 MW renewables additions by 2030 (2017 LTO)	Forecast 2,625 MW renewables additions by 2030 (including REP 1,2,3) • REP program terminated (June 10, 2019) • Corporate PPA procurement driven outside of initial REP

- Less "out-of-market" generation is expected after the termination of the REP program

Demand Forecast





- The AESO's LTO demand forecast has declined significantly since 2016, as the oil and gas sector has slowed
- Economic growth projections have reduced
- Need for near term generation additions is lower than anticipated in 2016

Break

- Light refreshments available – please return in 10 minutes

Forward Looking Revenue Sufficiency Assessment

Description of Modeling

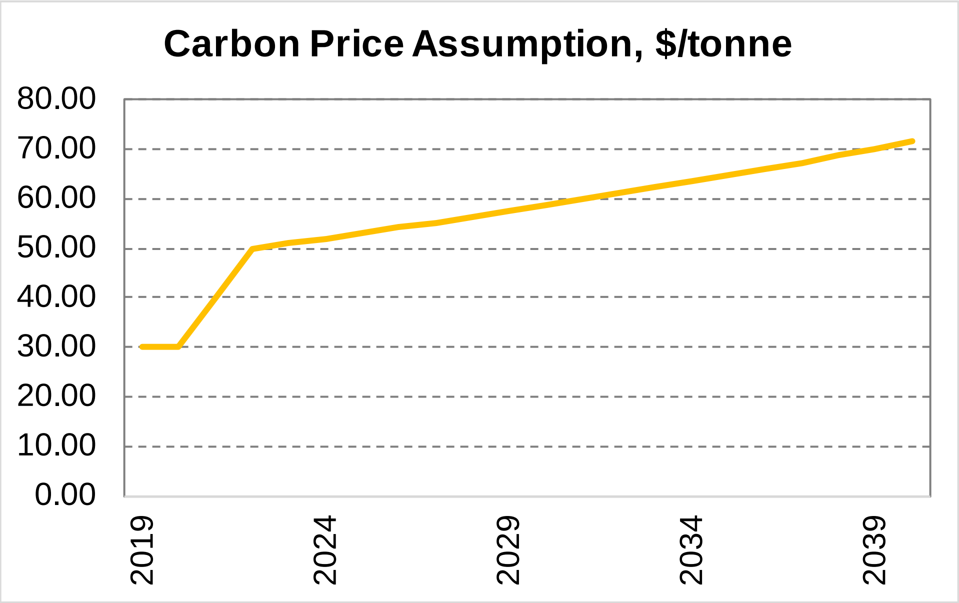
- A three part test: Aurora, stand-alone financial evaluation and resource adequacy model (RAM) evaluation
- The AESO prepared several forward looking scenarios using the Aurora forecast model
  - Aurora performs chronological commitment and dispatch logic, which emulates operational decisions
    - Economic offers modelled based on observed historical behaviour
  - Scenarios relied on the model to determine economic build additions by estimating real levelized value of new and existing resources, iteratively
  - The revenue, operating costs, and cash flows were then derived for each new facility to determine investment performance metrics
  - The generation builds from Aurora runs were tested within the RAM to ensure resulting reliability metrics did not exceed the resource adequacy threshold

High Level Conclusions

- The AESO modelled the following scenarios
  - Reference case
  - Reduced coal-to-gas conversions
  - Lower renewable capital costs
  - Increased carbon cost
  - Higher priced coal-to-gas offers
- Throughout the various scenarios the existing energy only market framework appears to provide reasonable financial returns to developers of diverse generation types
  - AESO’s key focus unit will be natural gas units
- Results do not demonstrate a foreseeable long-term supply adequacy issue

Reference Case

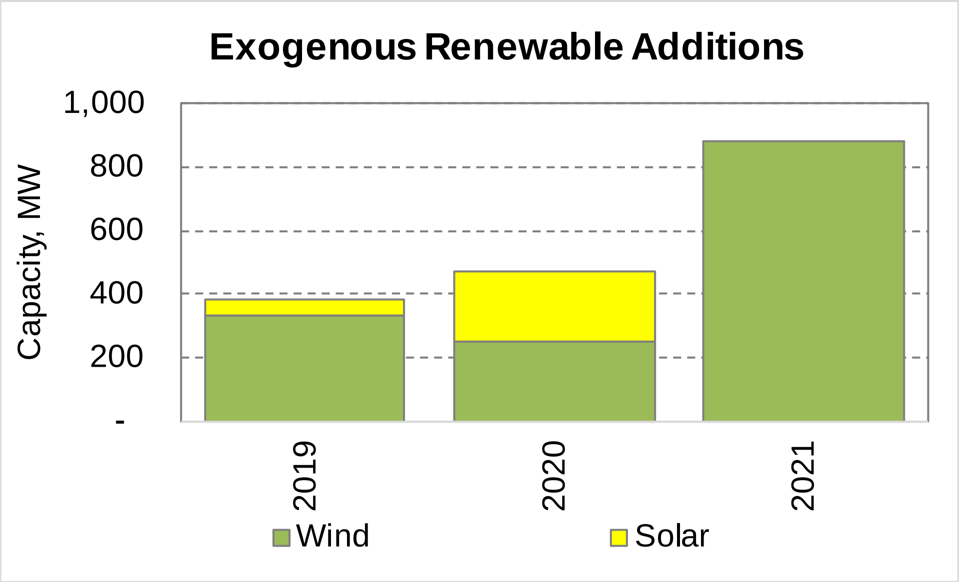
Key Economic Assumptions



- Carbon Price was modelled as $30/tonne (nominal) for 2020, escalating to $40/tonne (nominal) for 2021 and $50/tonne (nominal) for 2022, escalating at 2% onward
- Weighted Average Cost of Capital (WACC) is 10.5% (nominal, pretax)
  - Based on a higher cost of equity (15%) than the Capacity Market study by Brattle and 6% debt rate, leveraged 50% / 50%

Key Generation Assumptions

- 2019 LTO cogen, storage and coal-to-gas additions
  - 495 MW of Cogen by 2030
  - 50 MW of Storage in 2031
  - 4,890 MW of Coal-to Gas Generation by 2030
- Several known renewable additions were included in the reference case, others were added economically by the model



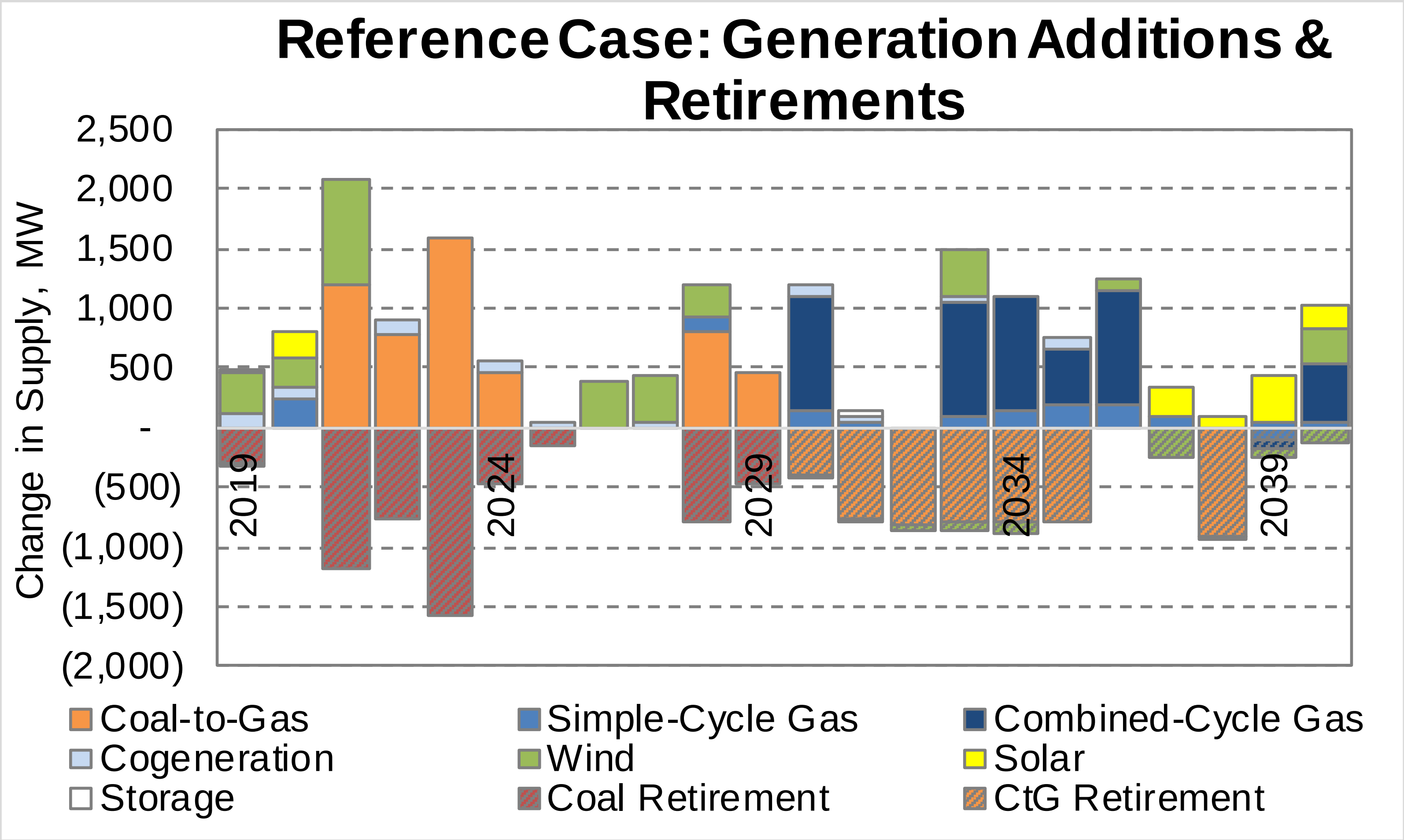
  - 1,465 MW of wind development is forecast by 2021
  - 268 MW of solar development is forecast by 2021

New Facilities - Economic Additions

Facility Type	Overnight Capital Cost ($/kW)	Fixed O&M ($ / kW-year)	Variable O&M ($/MWh)	Generator Capacity (MW)	Heat Rate (GJ/MWh)
Combined-Cycle Natural Gas	1,667	$49.71	$2.49	479	7.03
Simple-Cycle Natural Gas – Aeroderivative	1,159	$52.83	$4.24	46.5	9.68
Solar Photovoltaic – 2021-2025	1,643	$31.85	Credit: grid intensity x carbon price	50	N/A
Solar Photovoltaic – 2026-2030	1,388	$31.85	Credit: grid intensity x carbon price	50	N/A
Wind Generation - 2021-2025	1,586	$32.50	Credit: grid intensity x carbon price	50	N/A
Wind Generation - 2026-2030	1,105	$29.25	Credit: grid intensity x carbon price	50	N/A

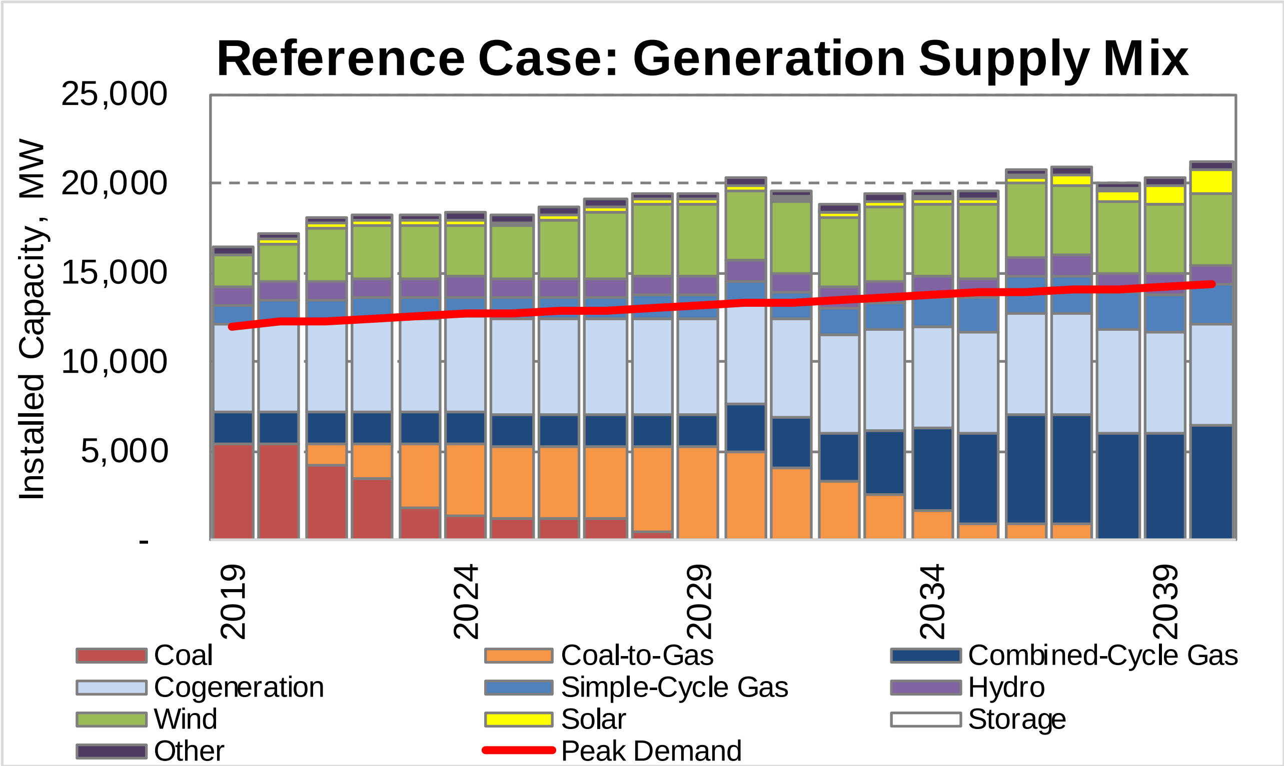
- The Aurora model selects new generation additions from this list based on economic merit
- Combined-cycle and simple-cycle natural gas cost were updated to reflect recent builds in Alberta and western Canada (results in more balance between combined-cycle and simple-cycle builds)

Resulting Economic Generation Additions



- The majority of forecast generation additions are natural gas combined-cycle assets
- A modest amount of simple-cycle natural gas assets are added as economics allow
- New wind and solar builds are economic throughout the forecast horizon

Resulting Economic Supply Mix



- Aurora's forecast depicts a transition to a natural-gas generation dominated future by 2030, with renewables accounting for over 25% of the total capacity
- Coal plants are expected to convert to natural gas boilers in the near term
- Coal-to-gas boilers are expected to phase out by the mid 2030's

Revenue Sufficiency Analysis

- For each new asset that Aurora added into the forecast, an EBITDA calculation was derived by subtracting total operating costs from the energy market revenue
  - Energy market revenue was based on economic dispatch decisions made by Aurora
  - Renewable assets were given credit for Renewable Electricity Certificates commensurate with the carbon offset price multiplied by the grid intensity factor (as applicable)
  - No AS revenues were included in the EBITDA calculation
  - Operating costs include fuel, carbon emissions costs, losses, fixed O&M, and variable O&M
- EBITDA was added to construction cash flow, and IRR / Payback Period calculations were measured
- Debt issuance and repayment was added to the unlevered cash flow to calculate the equity cash flow
- Cash flows after 2040, rely on the terminal year and escalate revenues and costs from that point

Revenue Sufficiency Results Reference Case

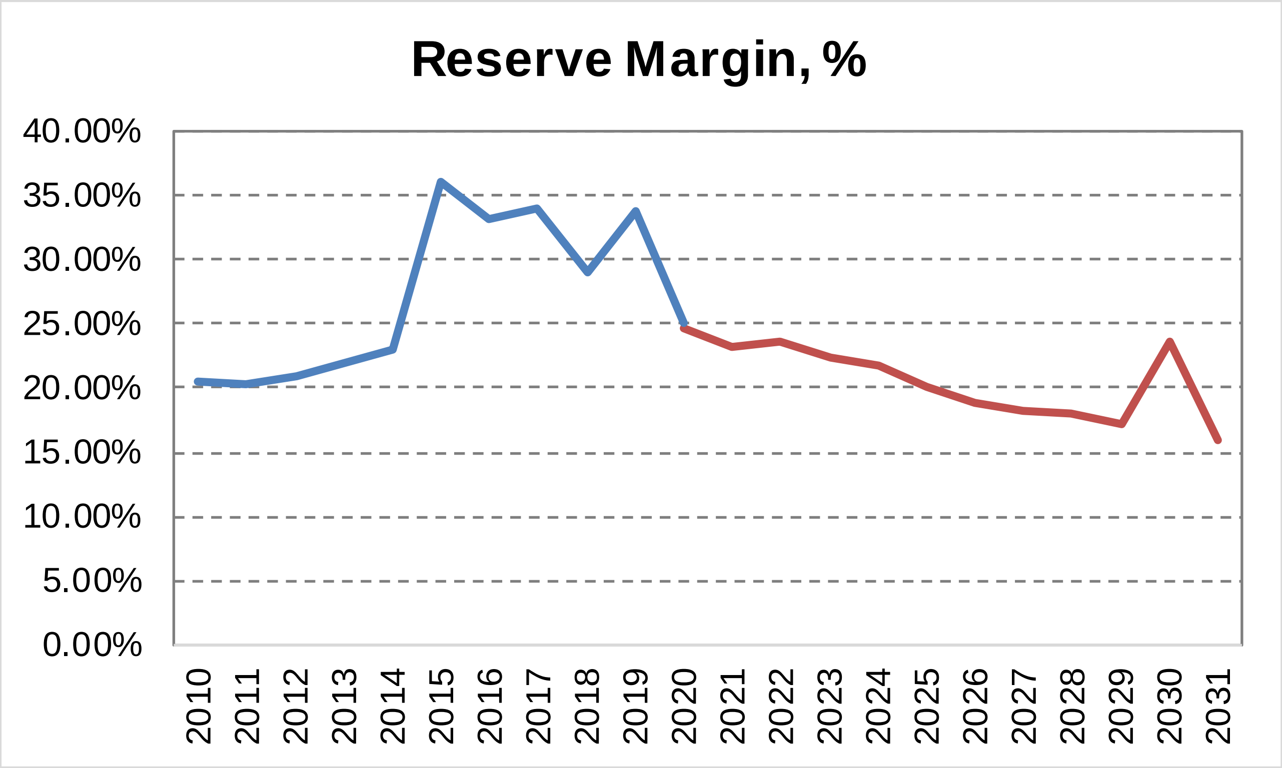
Facility Type	Average Return (%)	Average Equity Return (%)	Average Unlevered Payback Period (years)	Average Levered Payback Period (years)
Combined Cycle	15%	22%	6	4
Simple Cycle	13%	21%	7	4
Wind	21%	33%	5	4
Solar	7%	7%	12	12

- New simple-cycle and combined-cycle units can achieve reasonable rates of return
- Wind units appear to consistently produce strong returns
- Solar returns rely on a terminal year multiple in 2040, since these builds occur between 2037 and 2040: These returns should be considered approximate only
- Coal-to-gas economics are expected to be strong for the majority of projects

Revenue Sufficiency Results

- New simple-cycle and combined-cycle units can achieve reasonable rates of return
- Wind units appear to consistently produce strong returns
- Solar may be economic in the long-term, but appears marginal
- Coal-to-gas economics are expected to be strong for the majority of projects

Resulting Economic Reserve Margin



- Reserve margin trends lower towards 2030
  - More reliable new generation replaces existing legacy coal units
- Reserve margin a simplistic metric, whereas expected unserved energy (EUE) provides a better view of reliability

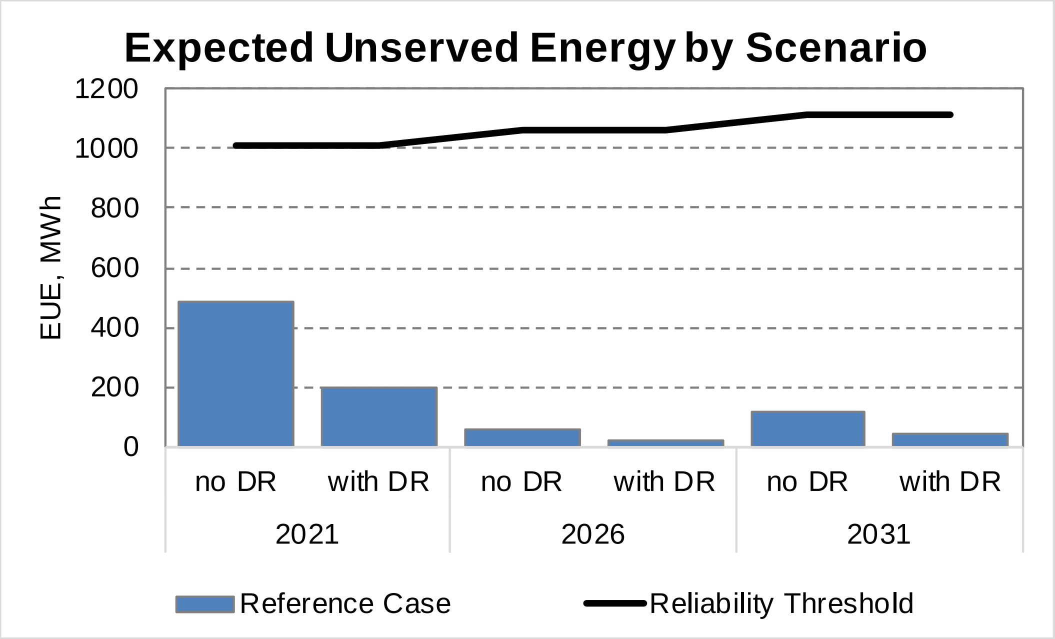
Reliability Evaluation

- The Resource Adequacy Model (RAM) determines the relationship between supply (MW) and reliability (EUE MWh) using a probabilistic approach that varies load and generation
- The RAM was used to evaluate Resource Adequacy metrics and determine if the Long Term Adequacy Threshold is met
  - The threshold: annual unserved energy must be less than 0.0011% of the total forecast energy (Rule 202.6, a system supply shortfall occurring once in ten years)
  - Evaluate resource adequacy for 2021, 2026 and 2031 using RAM with specifications aligned with Aurora
  - Evaluated an additional set of scenarios in which a demand response within the province was included

Resource Adequacy Model Assumptions

- Changes in Assumptions in the Resource Adequacy Model from the previous capacity market calculations
  - Load forecast updated
    - Aligned with the P50, 2019 LTO forecast
    - 30 weather years, 5 different economic outlooks (Economic shock values range from 3.4% to -4.0%)
  - Base Generation Fleet updated
    - Aligns with the assumptions and generation builds from Aurora
    - New Gas, Cogeneration, Solar and Wind for 2019-2021
    - Addition of Coal to Gas Conversions
      - *Aligns timing and characteristics with those assumed in the 2019 LTO (Reduced MSG, heat rates, forced outage rates, maintained similar planned outage rates)*

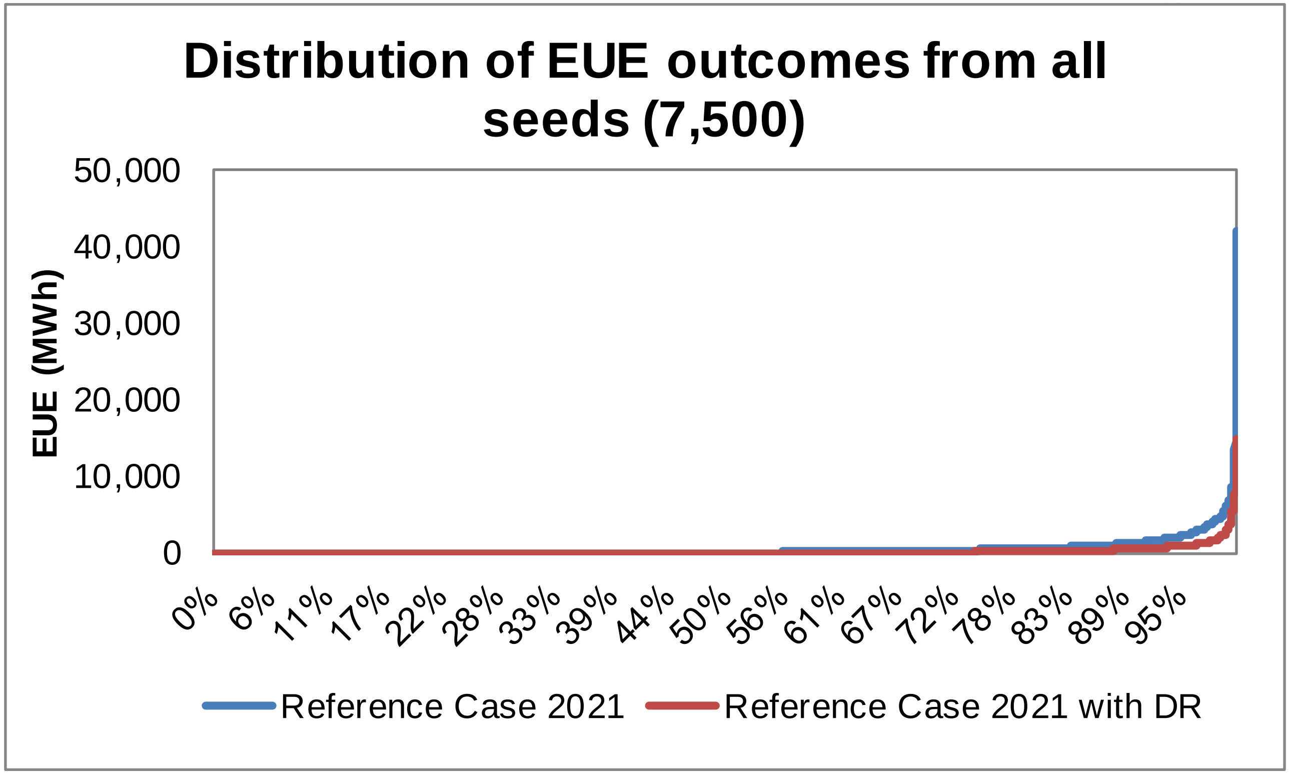
Reliability Metric Results



- Reference case and a scenario which included additional demand response (DR) were run for each reference year
  - Some price responsive load is already contained within the load forecast
- Only year 2021 shows elevated risk of EUE: This year will be monitored via LTA and Market Update process

All simulations are below the threshold value and thus meet the LTA threshold standard

Range of EUE outcomes



	2021	2021 with DR	2026	2026 with DR	2031	2031 with DR
Max EUE, MWh	42,000	14,900	11,150	9,750	9,050	8,100
Min EUE, MWh	-	-	-	-	-	-
Average EUE, MWh	486	196	61	21	120	47
Count of Zero EUE Seeds	3,448	5,036	6,370	7,015	5,466	6,507
% of Seeds with Zero EUE	46%	67%	85%	94%	73%	87%
% of Seeds that Exceed Threshold	13%	5%	1%	0%	3%	1%

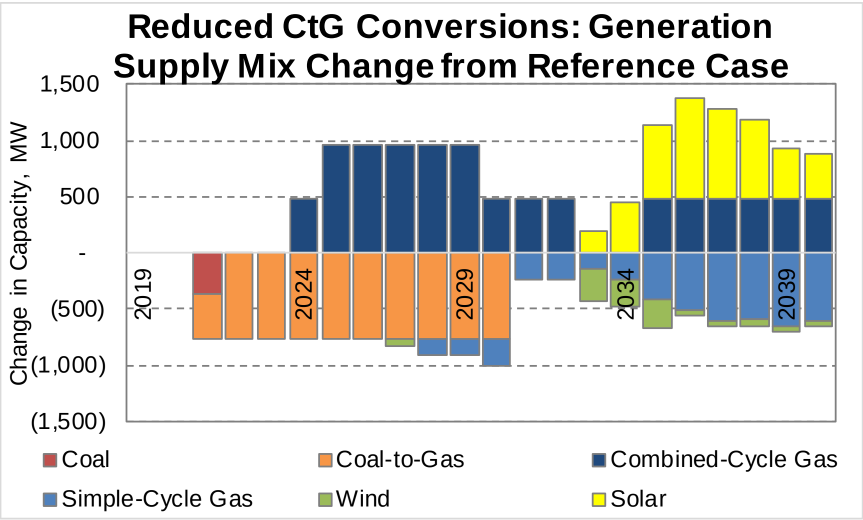
Additional Scenarios:

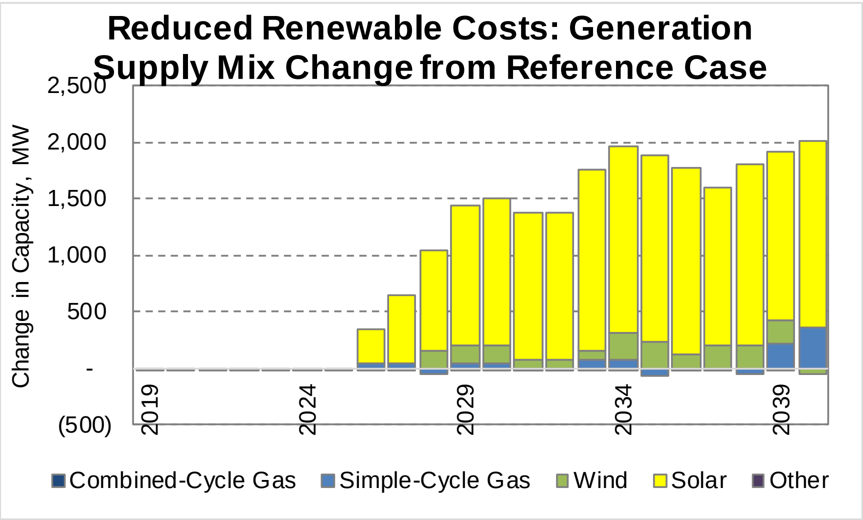
Reduced Coal-to-Gas Conversions
Reduced Renewable Capital Costs
Increased Carbon Costs
Higher Coal-to-Gas Offers

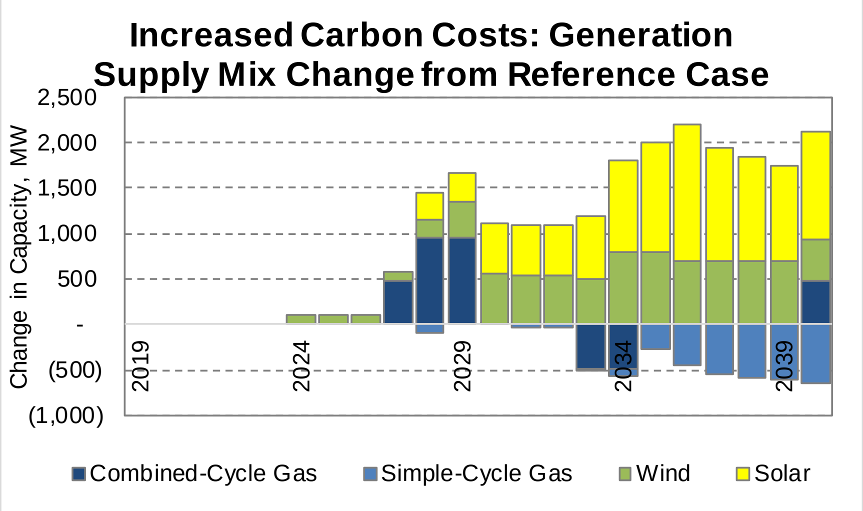
Changes to Reference Case

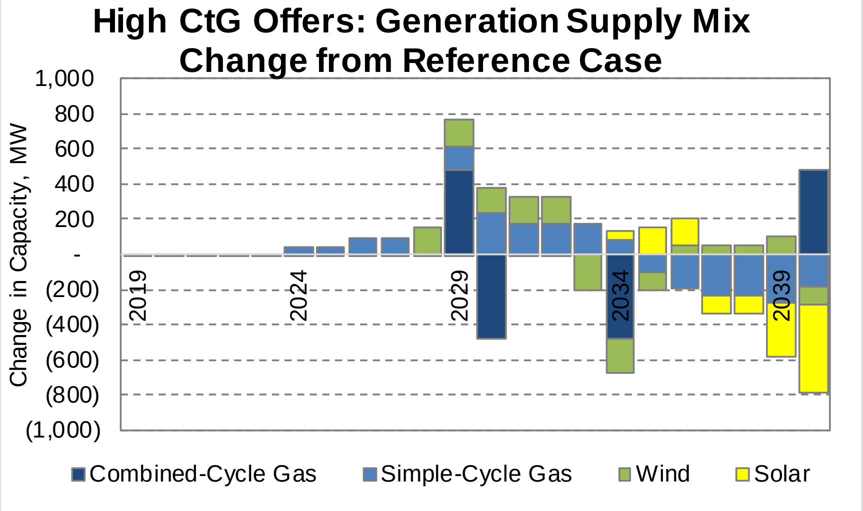
- *Reduced Coal-to-Gas* scenario
  - omits the conversion of two coal units and retires the units in 2021
- *Reduced Renewable Capital Costs*
  - The *Reduced Renewable Capital Cost* scenario reduces the wind and solar capital costs by 20% in the near term (2019-2025) and by 40% in the longer term (2026+)
- *Increased Carbon Costs*
  - increases the carbon cost to $100 per tonne by 2030
  - cost of natural gas was increased by $0.45 per GJ in 2023, $1.20 per GJ in 2030, and $2 per GJ in 2040 to reflect the increased natural gas price cost
- *Higher Coal to Gas Offers*
  - changes the bidding behavior of coal-to-gas units from 1.45 X variable cost to 1.8 X variable cost

Forecast Generation Additions: Change from Reference Case









- “Reduced Renewable Costs” scenario adds the most renewable capacity by 2030
- “Policy Driven Renewables” results in the most wind generation capacity and the least simple-cycle gas
- High prices in the “High Coal-to-Gas Offers” scenario add more renewable energy by 2030 than the “Reference Case”
- “Reduced Coal-to-Gas Conversions” scenario results in earlier combined cycle capacity

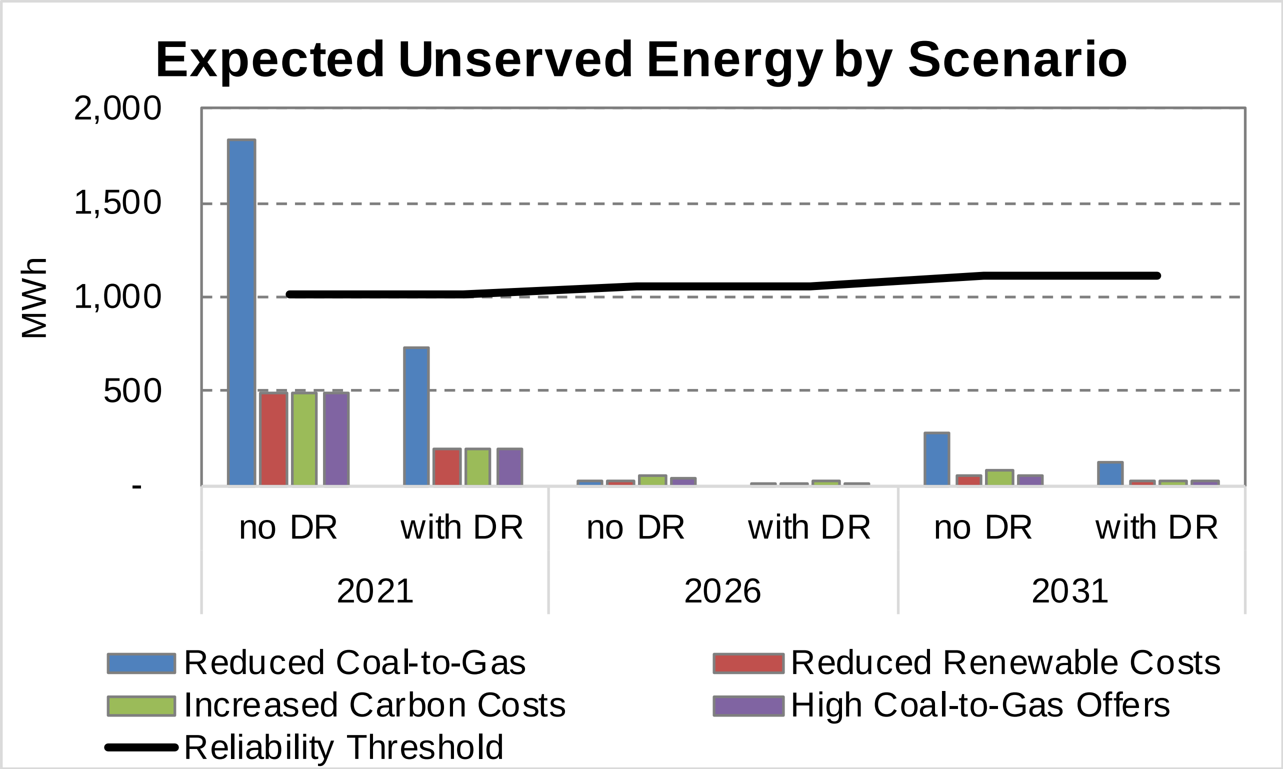
Revenue Sufficiency Results Scenarios

Facility Type	Average Unlevered Internal Rate of Return (%)	Average Levered Internal Rate of Return (%)	Average Unlevered Payback Period (years)	Average Levered Payback Period (years)
Combined Cycle				
Reduced Coal-to-Gas	14%	21%	7	5
Reduced Renewable Costs	15%	22%	6	4
Policy Driven Renewables	17%	26%	6	4
High Coal-to-Gas Offers	15%	23%	6	4
Simple Cycle				
Reduced Coal-to-Gas	14%	24%	7	5
Reduced Renewable Costs	13%	21%	7	4
Policy Driven Renewables	19%	33%	5	3
High Coal-to-Gas Offers	16%	27%	6	5
Wind				
Reduced Coal-to-Gas	21%	32%	5	4
Reduced Renewable Costs	21%	33%	5	4
Policy Driven Renewables	29%	49%	4	3
High Coal-to-Gas Offers	22%	35%	5	3
Solar				
Reduced Coal-to-Gas	6%	6%	13	13
Reduced Renewable Costs	7%	7%	12	12
Policy Driven Renewables	11%	15%	9	7
High Coal-to-Gas Offers	9%	11%	10	8

Revenue Sufficiency Results

- Combined Cycle units can achieve investment returns and attractive payback metrics
- Simple Cycle facilities exhibit a wide range of returns most of which are higher than the 10.5% hurdle rate
- Renewable facilities generate strong economics, buoyed by high-value carbon-offsets
- Facilities that commercialize near the end of the forecast incorporate a terminal EBITDA value, based on 2040, for a substantial portion of their cash flow and IRR calculations

Reliability Evaluation



- The “Reduced Coal-to-Gas” scenario exceeds the reliability threshold of 0.0011% of the total forecast energy unserved, in the scenario ***without demand response***
  - This scenario demonstrates an extreme, but it may not represent rational load behavior or investor behavior, since the Coal-to-Gas assets that were retired in this scenario would be economic
- ***All other scenarios provide average expected unserved energy well within the reliability threshold***

Conclusions

- The AESO modelled several plausible future scenarios
- In all scenarios: revenue sufficiency and acceptable resource adequacy exist in the Alberta “energy-only” market
  - Return expectations for new entrants are generally higher than the investment hurdle rate
  - EUE results are below the threshold outlined in ISO Rule 202.6 -5(1)(a) in all years

Historical Revenue Sufficiency Assessment

Methodology Overview

- The administrative pricing framework should support the cycle of entry and exit that leads to dynamic efficiency gains
  - Investment cycles replace inefficient assets
  - Innovation results in new and improved technologies

- Why we are looking at the historical record? We want to identify:
  - Periods where profitable entry could occur and did not
    - May indicate that there are barriers to entry/exit
  - Sustained periods with inadequate supply and entry is not profitable
    - May indicate that price signals are not forming properly

Methodology Overview

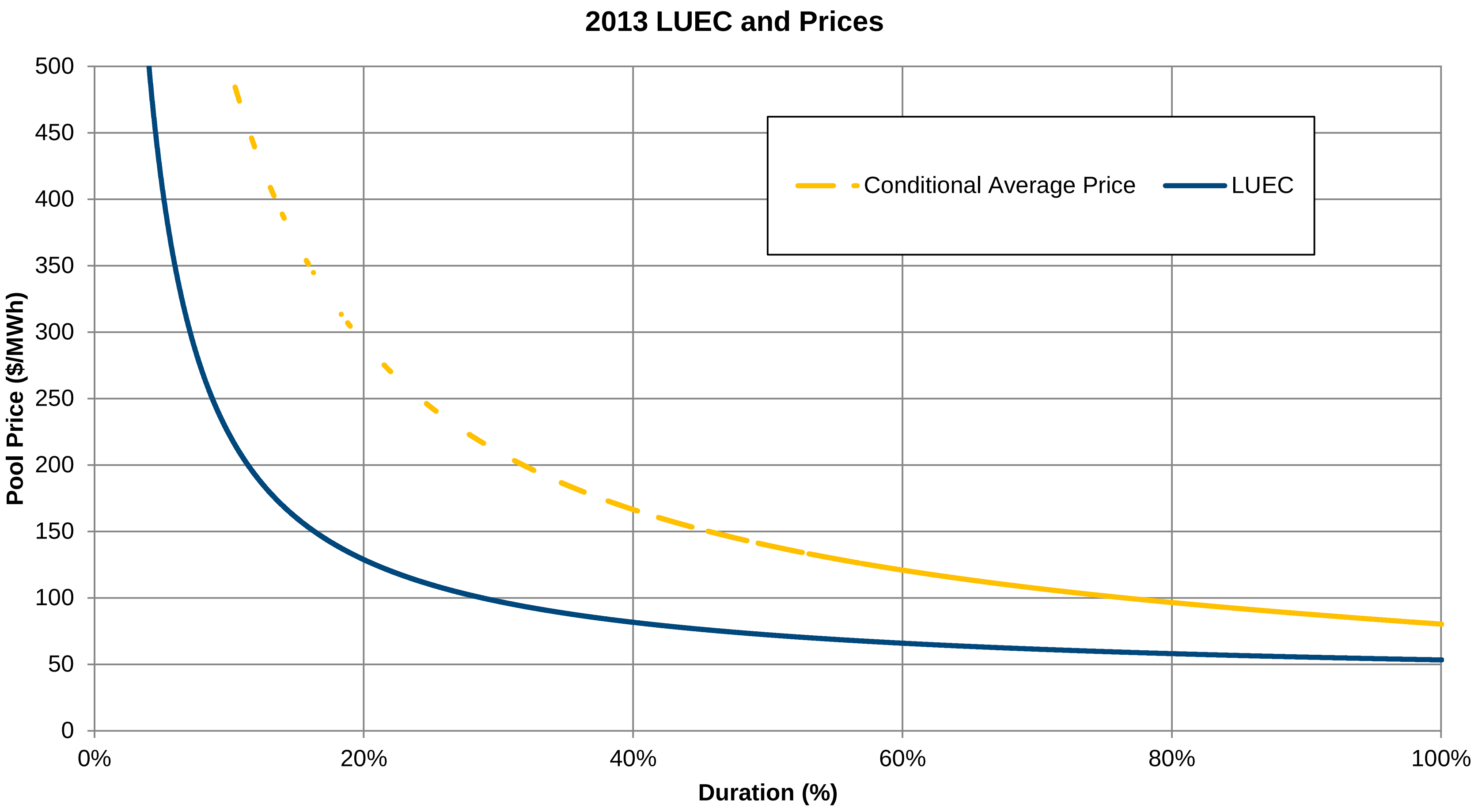
- Levelized unit electricity cost (LUEC) is determined using cost parameters of a simple-cycle aeroderivative gas turbine
  - Input assumptions are the same as the reference case from the forward looking assessment
- This type of asset is the best representation of a marginal entrant
  - Quick to build
  - Scalable
- The LUEC curve represents the average cost of a new entrant based on capacity factor

Methodology Overview

- This LUEC is then compared to the conditional average price
  - Conditional average price curves represent the average price over the hours with the highest given percentage of prices over the year
- The interpretation of this analysis is that entry would be profitable in a given year for a unit operating at any capacity factor where the conditional average price curve is above the LUEC curve
  - This assumes that the asset owner is able to perfectly forecast the annual distribution of prices
- Comparing these curves yields an optimal profit

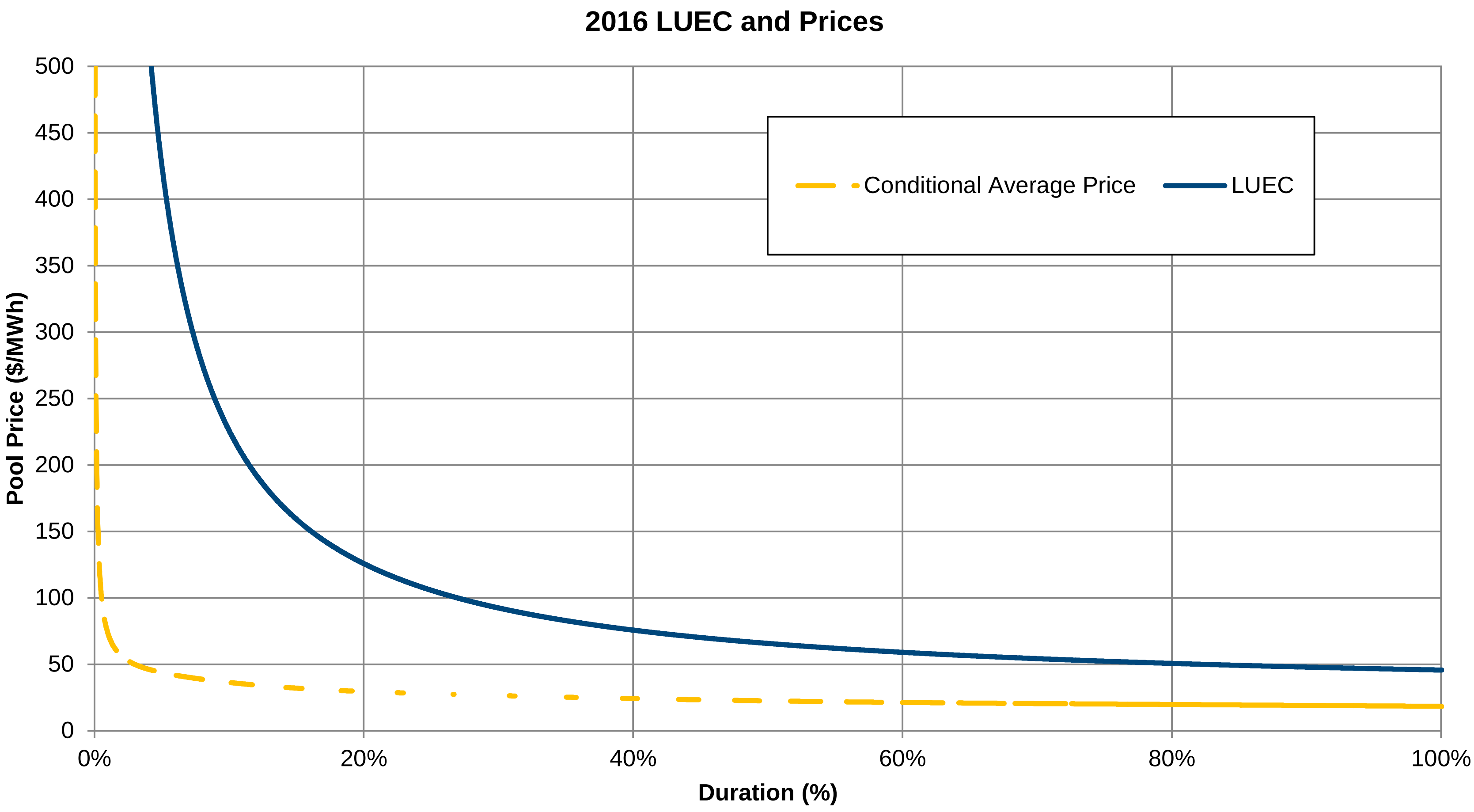
2013 LUEC and Prices

- Prices in 2013 would allow for profitable entry when operating under any capacity factor



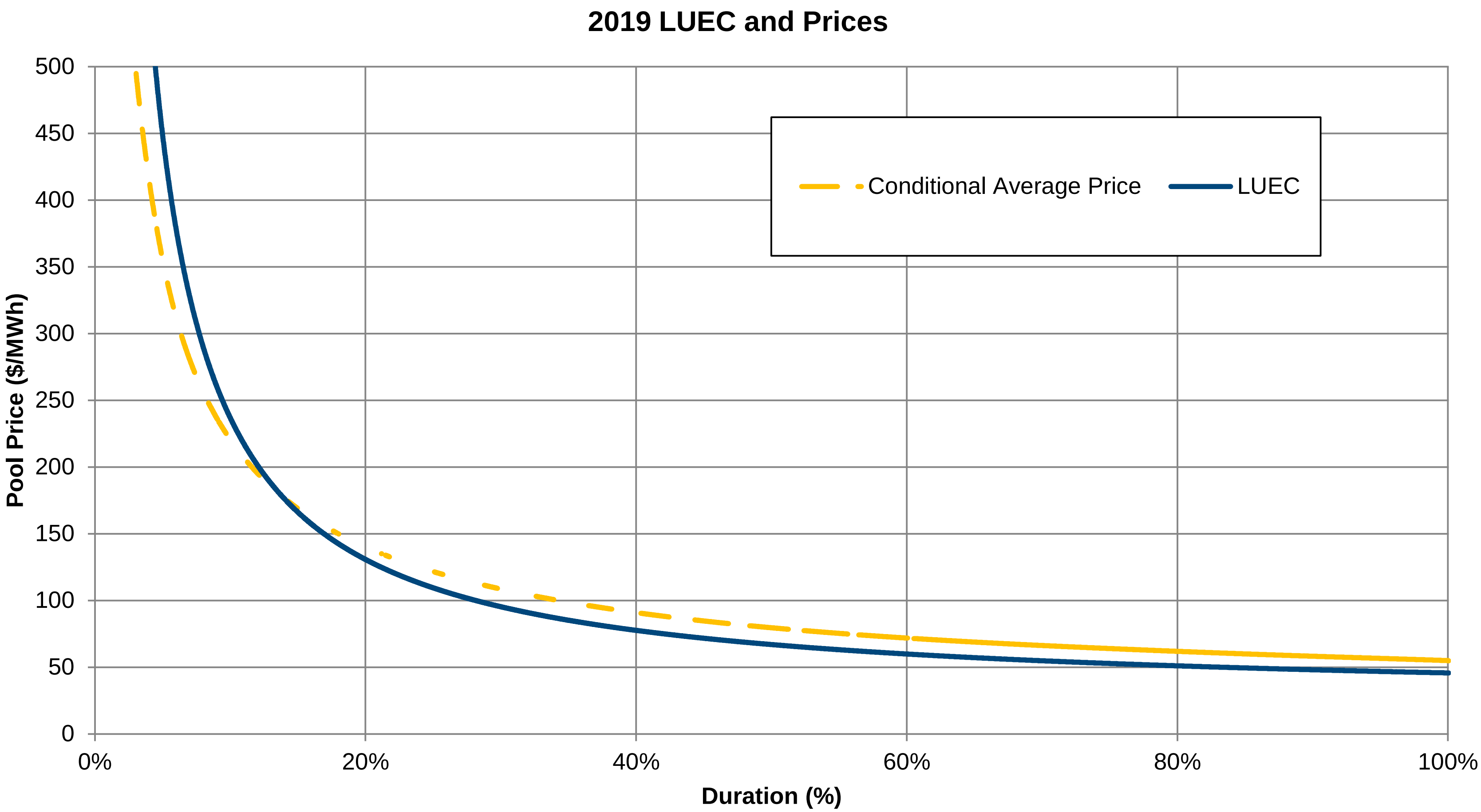
2016 LUEC and Prices

- Prices in 2016 would not allow for profitable entry when operating under any capacity factor



2019 LUEC and Prices

- Profitable entry in 2019 depends on the capacity factor
- High capacity factors are generally more profitable



Full Results

Year	Optimal Profit ($/MW)	Average Supply Cushion (MW)	Net Capacity Additions (MW)
2013	297,194.81	1,493	163
2014	(3,438.26)	1,933	1,583
2015	(66,337.23)	2,255	134
2016	(166,008.16)	2,333	110
2017	(164,260.33)	2,156	206
2018	69,372.04	1,840	(520)
2019	81,578.16	1,606	426

Conclusions

- The profitability of entry exhibits a strong negative relationship with supply cushion
  - Correlation coefficient of ρ = -0.92
- Entry and exit track profitability with a modest time lag
  - 2013-14 – entry opportunity captured by substantial capacity additions
  - 2015-2017 – abundant supply reflected by low price environment; market exit followed
  - 2018-2019 – prices signaling opportunity for entry
    - Recent announcements suggest that the market is responding to this price outlook
- Market framework has sent efficient and timely price signals to the market

Questions?

Next steps

Conclusions from resource adequacy assessment

- The existing offer cap is sufficient to recover costs
  - Forecasted revenue sufficiency studies show profitability within the offer pricing framework
  - Historically assets have been added when pricing signals indicated profitable entry could occur
- Resource adequacy requirements expected to be met in all scenarios
- The AESO will be seeking input on whether any assets in Alberta have variable operating costs that exceed the existing offer cap

March stakeholder session: a focus on efficiency of short term response

Energy pricing framework should ensure efficient and effective signals are provided to promote the following:

- Long term adequacy: through providing clear transparent signals on the need for capacity, and revenue sufficiency with reasonable expectations of recovery of capital and return on capital
- Efficient short-term market response: involves ensuring that the pool price creates the right signals for the market and administrative price levels do not hinder these signals, including:
  - Provide short term price signals to encourage flexibility and response from both supply and demand resources;
  - Provide self-commitment decision signals, and also provide a mechanism for the recovery of start-up and cycling costs;
  - Provide the signal for participants to import or export.

Short-term efficiency evaluation

- In our next stakeholder session, we will present our findings from our short-term efficiency evaluation
- Analysis will include:
  - Efficiency of price cap:
    - Frequency of shortage events
    - Demand response
    - Supply response (LLT, unit return from outages, imports)
  - Efficiency of price floor:
    - Frequency of supply surplus events
    - Estimation of efficient floor: wind curtailment costs, import costs, coal and combined cycle cycling considerations
- Goal is to determine whether there are opportunities to improve efficiency and competitive responses rather than administrative responses during scarcity and surplus situations and also evaluate the robustness of the existing pricing framework over time

Closing remarks and next steps

- Opportunity for comment following this session – comments due within 10 business days
- Next stakeholder session planned for late March
  - Recap previous session
  - Review effectiveness of short-term market response during shortfall/surplus conditions
  - Discuss where the AESO thinks there are issues/opportunities
  - Discuss alternative pricing approaches – comparison with status quo

Contact the AESO

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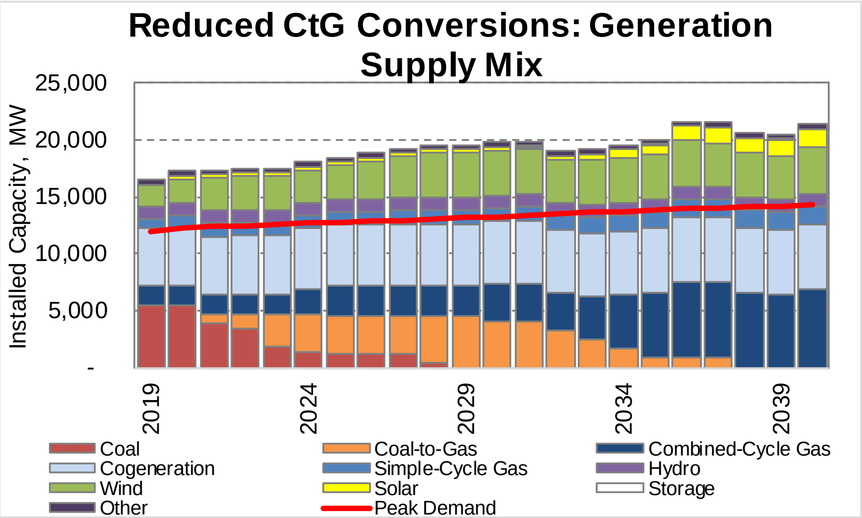
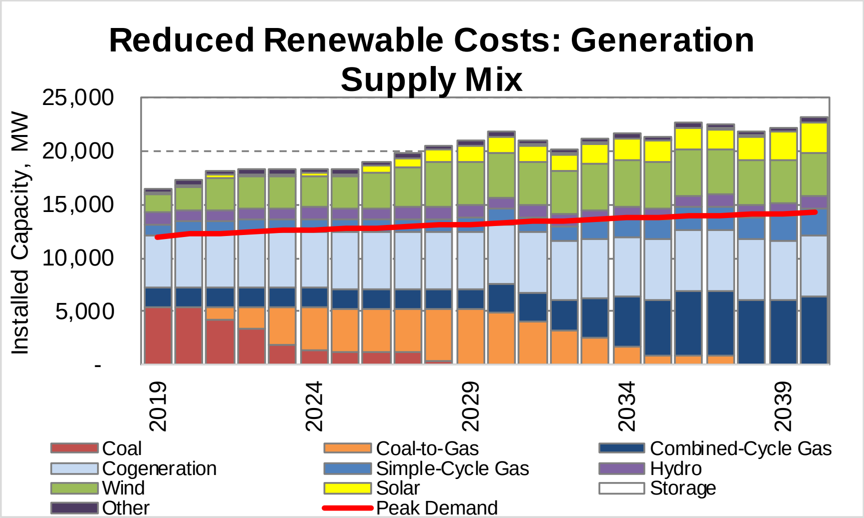
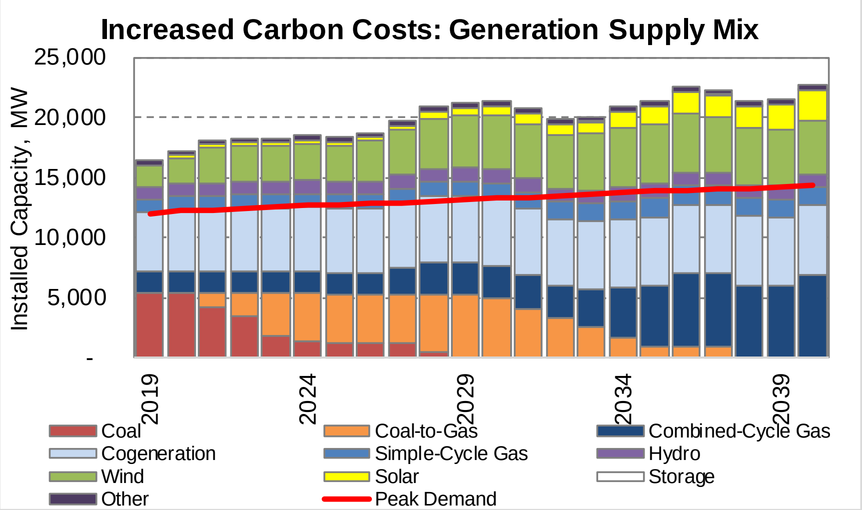
Thank you

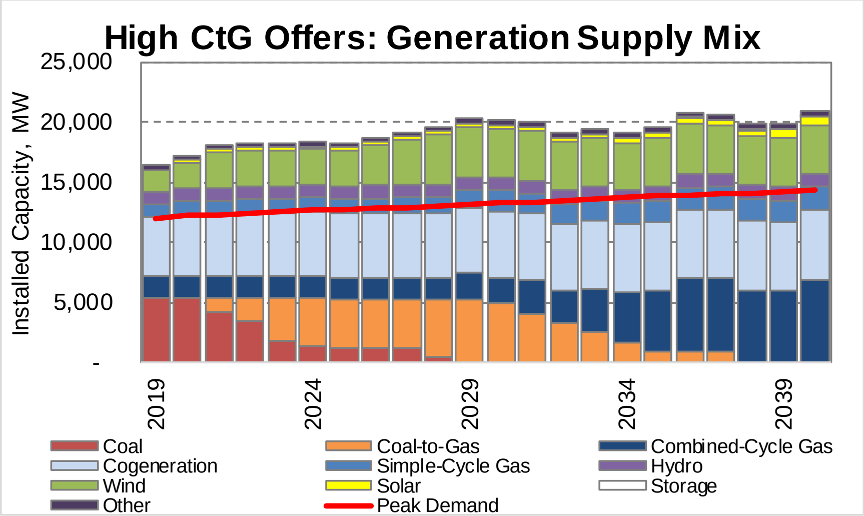
Appendix

Additional Scenarios: Forecast Generation Supply









- Each scenario demonstrates the fossil fuel transition from Coal to Gas boiler conversion to combined cycle gas generation
- Renewable capacity increases in all of the scenarios
- “Policy Driven Renewables” and “Reduced Renewable Costs” scenarios both result in high amounts of renewable capacity