Bulk and Regional Tariff Design Stakeholder Engagement Session 6A

June 3, 2021

Public

Notice

In accordance with its mandate to operate in the public interest, the AESO will be audio recording this session and making the session recording available to the general public at www.aeso.ca. The accessibility of these discussions is important to ensure the openness and transparency of this AESO process, and to facilitate the participation of stakeholders. Participation in this session is completely voluntary and subject to the terms of this notice.

The collection of personal information by the AESO for this session will be used for the purpose of capturing stakeholder input for the Bulk and Regional Tariff Design engagement sessions. This information is collected in accordance with Section 33(c) of the *Freedom of Information and Protection of Privacy Act*. If you have any questions or concerns regarding how your information will be handled, please contact the Director, Information and Governance Services at 2500, 330 – 5th Avenue S.W., Calgary, Alberta, T2P 0L4, by telephone at 403-539-2528, or by email at privacy@aeso.ca.

Using Zoom – Asking questions

- Two ways to ask questions if you are accessing the webinar using your computer or smartphone
  - Click “Raise Hand” and the host will be notified that you would like to ask a question. The host will unmute your microphone, you in turn will need to unmute your microphone and then you can ask your question. Your name will appear on the screen, but your camera will remain turned off.
  - Click “Lower Hand” to lower it if needed.
  - You can also ask questions by tapping the “Q&A” button and typing them in. You’re able to up-vote questions that have been already asked.
- If you are accessing the webinar via conference call
  - If you would like to ask a question during the Q&A portion, on your phone’s dial pad, hit *9 and the host will see that you have raised your hand. The host will unmute your microphone, you in turn will need to unmute your microphone by hitting *6 and then you can ask your question. Your number will appear on the screen.

Stakeholder participation

The participation of everyone here is critical to the engagement process. To ensure everyone has the opportunity to participate, we ask you to:

- Listen to understand others’ perspectives
- Disagree respectfully
- Balance airtime fairly
- Keep an open mind

Welcome and Introductions

Session purpose and objectives

- The purpose of this session is to engage stakeholders in a discussion of Session 5 stakeholder feedback or follow-up and key questions raised by the Alberta Utilities Commission (AUC) staff, and to provide additional clarity and build mutual understanding of the AESO’s preferred rate design and stakeholder concerns
- The session objectives include:
  - Share our learnings on Session 5 stakeholder feedback or follow-up
  - Present and seek stakeholder input on additional information on preferred rate design, including analysis of the potential response to the incentives provided in the rate design
  - Present responses to key questions raised by AUC staff
  - Seek to understand outstanding stakeholder concerns

Agenda

Time	Agenda Item	Presenter
8:00 – 8:15	Welcome, introduction, purpose and session objectives • Application filing extension request	AESO / Stack'd
8:15 – 8:45	Recap of preferred rate design and summary of stakeholder feedback received	AESO
8:45 – 9:15	Appropriateness of the flat energy charge • Time of use and dynamic pricing • On-peak versus off-peak charges • Mix/max load factor energy charges • Q&A	AESO / NERA
915 – 10:15	Cost recovery through avoidable charges and efficiency • Avoidable and non-avoidable charges • Efficiency • Q&A	AESO / NERA
10:15 – 10:45	Break	
10:45 – 11:45	Analysis of self-supply in response to the preferred rate design • Self-supply analysis • Q&A	AESO / NERA
11:45 – 12:45	Analysis of the short-term impact of the preferred rate design on the energy market • Energy charge • Coincident peak charge • Q&A	AESO
12:45 – 12:55	Session close-out and next steps	AESO

Registrants (as of May 27, 2021)

- Alberta Direct Connect Consumers Association (ADC)
- Alberta Energy
- Alberta Newsprint Company (ANC)
- Alberta Utilities Commission (AUC)
- AltaLink Management Ltd.
- Best Consulting Solutions Inc.
- Brubaker and Associates, Inc. on behalf of ADC
- Capital Power
- Cenovus Energy
- Chapman Ventures Inc.
- Chymko Consulting on behalf of Cities of Red Deer and Lethbridge
- City of Lethbridge
- CNRL
- Consumers Coalition of Alberta (CCA)
- Customized Energy Solutions
- DePal Consulting Limited
- Dow Chemical Canada ULC
- Enel North America
- ENMAX Corporation
- EPCOR Distribution & Transmission Inc.
- ERCO Worldwide
- FortisAlberta Inc.
- Heartland Generation Ltd.
- Imperial Oil
- Industrial Power Consumers Association of Alberta (IPCAA)
- International Paper
- ISCON
- Kalina Distributed Power
- Lionstooth Energy Inc.
- Matt Ayres Consulting
- Millar Western Forest Products
- NERA Economic Consulting
- Norton Rose Fulbright Canada LLP
- NRGCS
- Power Advisory LLC
- Solas Energy Consulting Inc.
- Suncor Energy Inc.
- TC Energy
- TransAlta Corporation
- Turning Point Generation
- Utilities Consumer Advocate (UCA)
- URICA Asset Optimization
- Wolf Midstream Inc.
- 2332823 Alberta Ltd.

Overview of Engagement Process

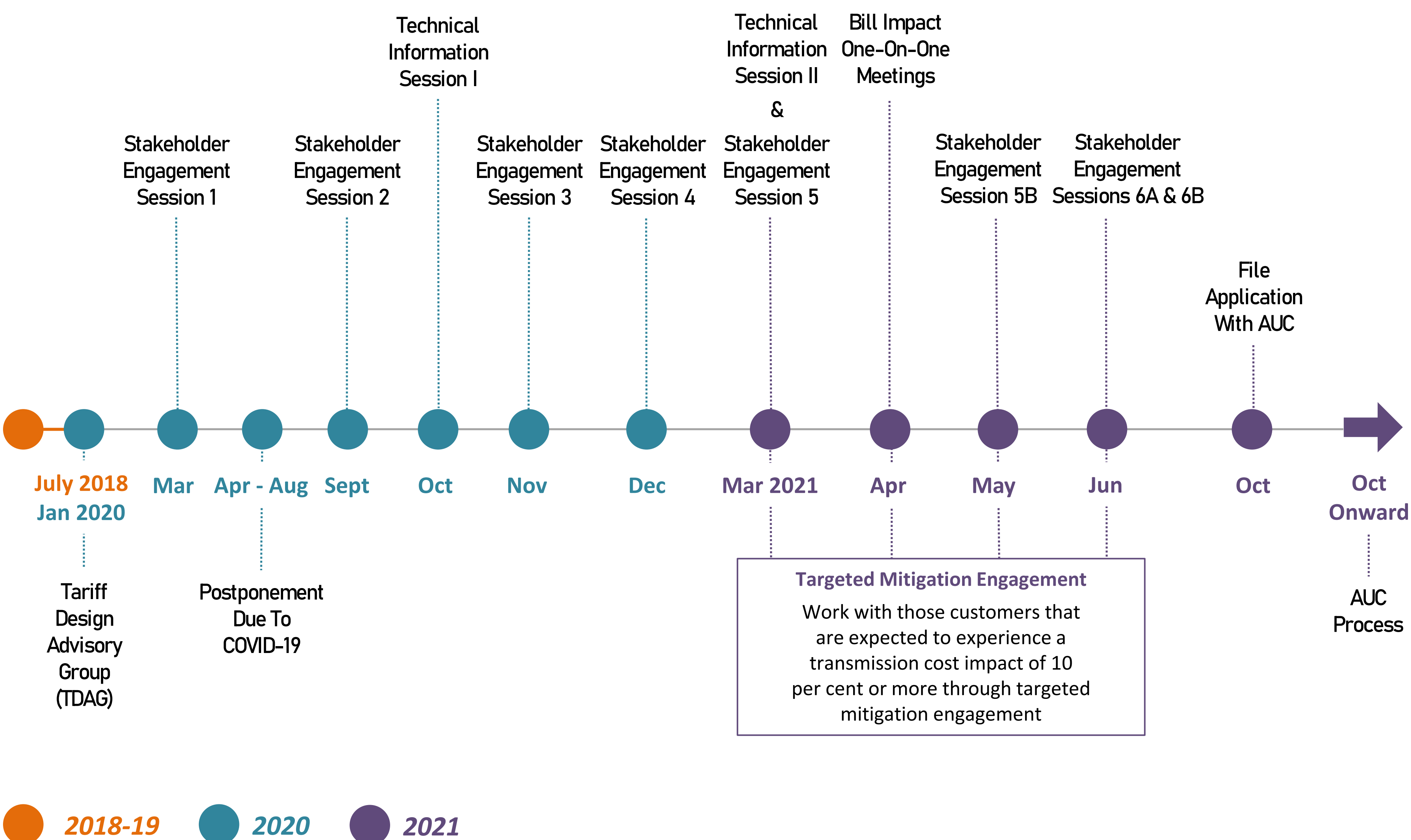
AESO Stakeholder Engagement Framework

Stakeholder engagement

The AESO's stakeholder engagement will:

- Ensure that stakeholders' needs and interests are consistently, transparently and meaningfully considered in the development of a rate design proposal for bulk and regional cost recovery;
- Provide clear objectives to be examined and evaluated in the development of a rate design proposal for bulk and regional cost recovery;
- Assist stakeholders in understanding and evaluating the AESO's preferred rate design;
- Supply stakeholders with tools that will allow them to consider and assess the impact of the AESO's preferred rate design; and
- Identify areas of alignment in order to support an efficient regulatory process.

Stakeholder engagement timeline



Your participation

- Your participation to date has been very insightful to the AESO in understanding your perspectives and helping the AESO develop its preferred rate design proposal
- Your continued participation in this engagement is critical to help us prepare a well-informed application to the AUC for the benefit of Albertans
- We are looking for collaborative solutions to minimize the disruption for customers who are impacted by these changes, and your continued engagement is critical for our success
- AESO recognizes the importance of providing clarity on this initiative for all of Alberta's electricity consumers

Recap of Preferred Rate Design

Cost allocation and cost causation

- Cost causation, cost responsibility, and cost reflective rates all relate to the same concept of linking the costs with cost drivers
- The costs of the transmission system are shared, and are not attributable to direct actions of specific, identifiable participants
  – Different types of transmission system use drive different types of costs
  – Cost causation is used to relate the types of use that drive costs and the costs of transmission
    - Investment in transmission results from forecasts, engineering studies, and the combined behaviours of all customers
    - Because costs are not attributable to one specific participant or behaviour, the relationship between transmission costs and cost drivers is representative

Responds to AUC staff questions 1.6 (a) and (c)

Preferred rate design aligns costs with drivers

- The preferred rate design characterizes use of the system to allocate transmission costs
  - Divides costs between demand-related cost drivers and costs driven by facilitating in-merit flow of energy
  - Divides demand costs between costs associated with coincident peak consumption and customer’s own peak loads
  - Energy charge will increase; peak and billing capacity charge will decrease relative to current tariff
  - No changes to the types of charges in current tariff: billing capacity charge, energy charge, peak charge (with five-year trailing average)
- Better aligns charges with use of the system
  - Customers who wish to manage costs through peak avoidance remain able to do so, but charges are more reflective of the transmission costs associated with response

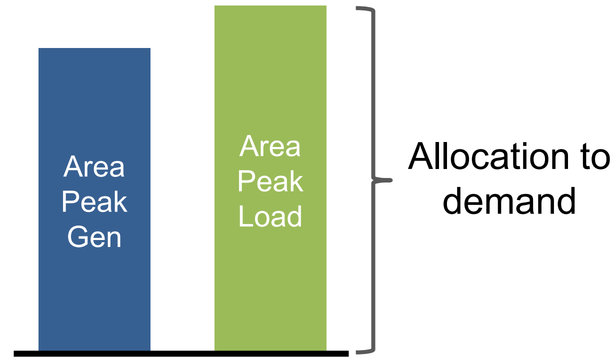
Minimum and actual system calculation

The following methodology is applied to determine the portion of costs allocated to demand and energy

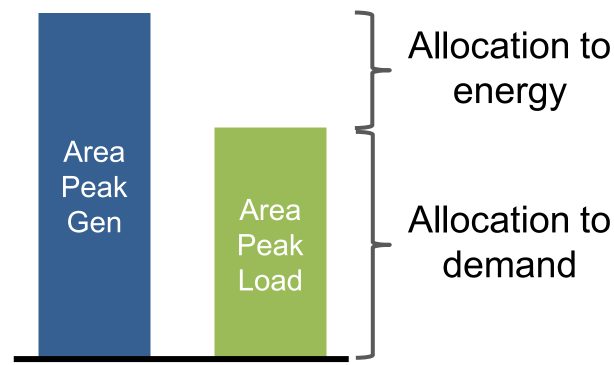
- **Minimum system**: Estimate of the transmission system required to meet peak load (demand)
- **Actual system**: Estimate of the additional transmission system required to facilitate the in-merit flow of energy
- Minimum and actual systems for Alberta are estimated as the sum of the minimum and actual systems across all planning areas
- Calculate the demand-share of costs based on the size of minimum and actual systems for Alberta

The resulting allocations for 2020 are 60 per cent demand and 40 per cent energy, and have changed minimally since 2015

Example of an area where peak gen < peak load



Example of an area where peak gen > peak load



Minimum system illustrative calculation

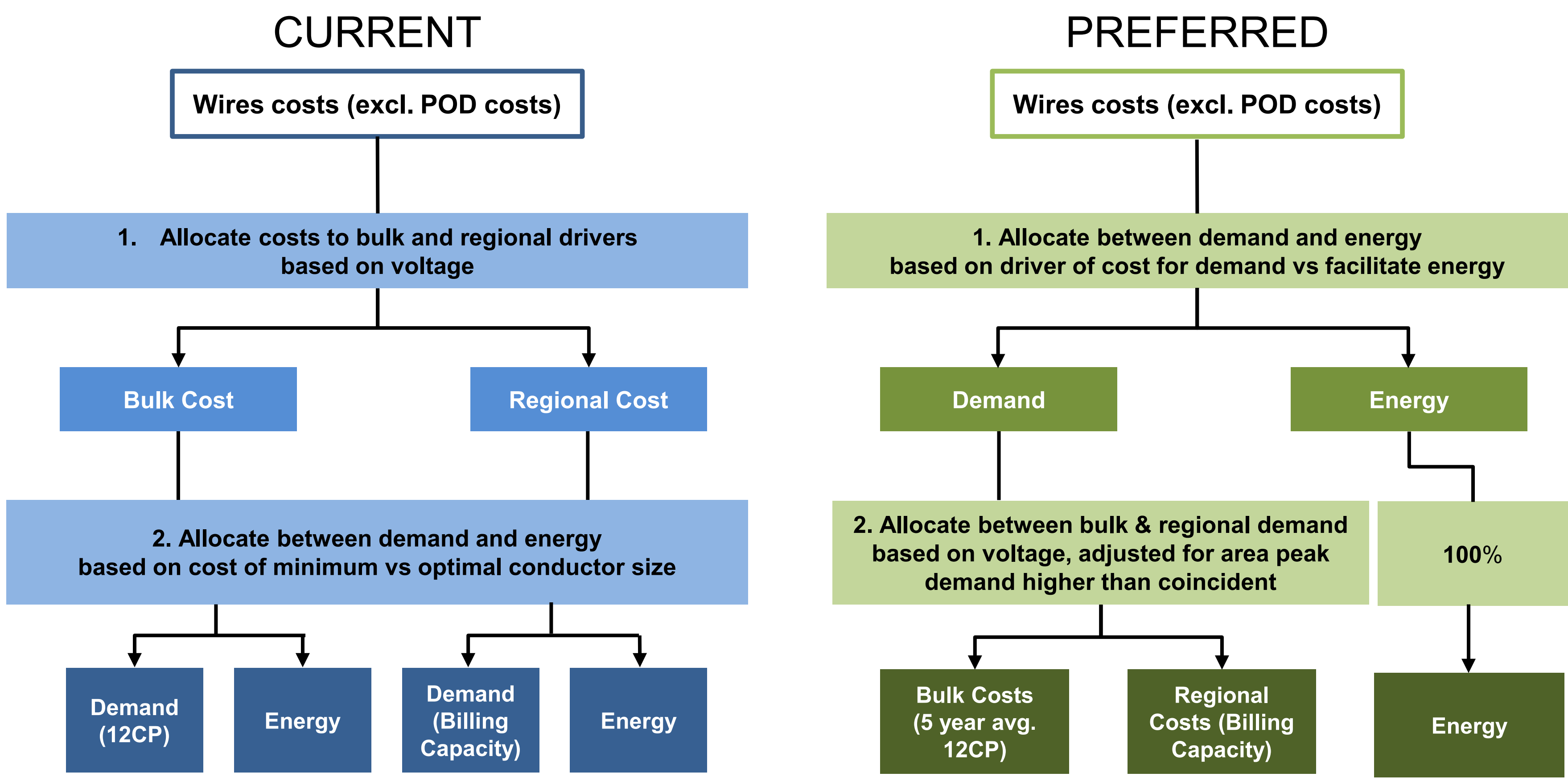
Area	**Peak Load (MWh)** (a)	**Peak Gen (MWh)** (b)	**Min System (MWh)** =(a)	**Additional System (MWh)** =(b) – (a) if (b) > (a), otherwise 0
1	100	0	100	0
2	100	100	100	0
3	100	150	100	50
4	0	100	0	100
5	20	10	20	0
Total			**320**	**150**

In this example the allocations across the whole province would be:

- Demand Allocation: 68% (320 / 470)
- Energy Allocation: 32% (150 / 470)

Allocations for the whole province are applied to the entirety of wires costs (excluding POD) to calculate rates that apply across the province

Current and preferred rate design



Current and preferred rate design

Type of charge	Cost Allocation (do not sum due to rounding)		Charges Estimated for 2019 test year	
	Current	Preferred	2019 Test Year	Preferred
Coincident Peak ($/MW month)	47%	29%	10,087	5,980
Energy* ($/MWh)	7%	31%	2.18	10.19
Billing Capacity ($/MW month)	22%	17%	2,668	2,055
POD (**out of scope**) ($/MW month)	24%	24%	N/A	
Total	**100%**	**100%**	**N/A**	

*Current energy charges are the sum of bulk and regional components

What We Heard from Session 5 Stakeholder Feedback

Summary

- Today we want to focus on key areas of stakeholder feedback and questions we received that are important to address to provide additional clarity and build a better understanding of the preferred tariff design
- Many stakeholders expressed concerns with the preferred rate design, including:
  - Belief that charge on energy is not appropriate to recover fixed costs
    - Suggest further analysis required on: analyzing time varying charges or min/max load factor charge, self-supply risk
  - Questions about 5-year average on 12-CP charge, mitigation through rate design versus bill credits, appropriateness of DOS for mitigation, and general request for more details
- Many stakeholders referred to AUC staff questions and indicated that AESO responses may help them to better understand the preferred rate design

AUC staff questions

- On April 7, 2021, the AESO received a list of 58 questions in six categories from the AUC staff in relation to the anticipated application, on the following general topics:
  - Appropriateness of cost recovery on avoidable versus unavoidable charges
  - Historical data on transmission costs and load growth
  - Transmission cost recovery based on coincident peak, time varying energy charges or other dynamic charges
  - How we plan transmission for various types of loads (including energy storage)

Our response to stakeholder feedback

- Today we want to share information on the following topics that have been raised through AUC staff questions and stakeholder feedback
  1) Appropriateness of the flat energy charge
  2) Cost recovery through avoidable charges and efficiency
  3) Analysis of self-supply in response to the preferred rate design
  4) Analysis of the short-run impact of the preferred rate design on the energy market

1) Appropriateness of the Flat Energy Charge

Concerns with proposed energy charge

- Stakeholders have commented on the following:
  - Concern that fixed costs recovered on variable charges is not aligned with cost causation and would send inefficient price signals (aligns with AUC staff questions)
  - Concern that the flat energy charge not consistent with time variation in use of transmission and would not send efficient price signals
    - Suggested improvement would be on-peak and off-peak charge
  - Concern that "penalizing" high load factor customers who use transmission efficiently not aligned with sending efficient price signals
    - Suggested improvement would be "Wright" tariff (min load factor/ max load factor) or declining block charges for energy
  - Concern about impacts on long-term response, incentives for self-supply / cost shifting (aligns with AUC staff questions)

Flat energy charge best reflects costs associated with in-merit energy

- There is no evidence for a cost reflective basis to recover costs associated with accommodating the flow of in-merit energy from a time of use energy charge
- The costs associated with accommodating the flow of in-merit energy are, by definition, not associated with changes in demand but with the use of energy
  - For example:
    - The costs of facilitating the flow of in-merit energy from wind generators are driven by times of windy conditions which may occur in any hour of the day.
    - Other flows of in-merit energy, i.e. from non-responsive baseload plant e.g. cogeneration or hydropower, may also occur in any hour of the day.

Responds to AUC staff question 5.4 and 5.5

Flat energy charge best reflects costs associated with in-merit energy

- There is no evidence for a cost reflective basis to vary the energy charge by customers' load factor
- A customer's decision to use energy in any hour means the AESO needs to accommodate the flow of in-merit energy to meet that load, irrespective of how that customer's use of energy in the hour compares to other times of the year

Responds to AUC staff question 5.4 and 5.5

Preferred rate design reflects costs and includes time of use charges

- The preferred rate design is made up of three charges, and recovers demand-related costs through time of use charges
- Given the relationship between system load and transmission load, the AESO's preferred rate design includes charges to reflect the costs of use at different times
  - A charge levied on 12-CP reflects costs incurred to meet consumption at times of coincident peak
  - A charge levied on billing capacity reflects investments required to meet specific customer demand at non-coincident peak
- The AESO's preferred rate design uses a flat energy charge to reflect the investments incurred to accommodate the flow of in-merit energy in all hours of the year under normal system operating conditions

Responds to AUC staff question 5.4 and 5.5

Questions?

2) Cost Recovery Through Avoidable Charges and Efficiency

Questions related to transmission cost recovery concepts

- Stakeholder feedback and AUC staff questions included several questions and comments related to:
  - Avoidable versus non-avoidable charges
  - Marginal cost approach to transmission pricing
  - Recovery of fixed costs through avoidable charges
  - Efficient and inefficient customer response
- We want to share some additional information in response to these themes and questions as they relate to some of the main aspects of the preferred rate design

Avoidable charges are relevant in a marginal approach to cost recovery

The concept of avoidable charges stems from a marginal cost approach

- A marginal cost approach to tariff design can send an efficient price signal levied on an avoidable charge, and uses a non-avoidable charge to recover the residual costs, provided the regulatory construct allows for locational pricing
- In the transmission context, a marginal cost approach to rate design should theoretically send an efficient price signal that reflects the costs imposed by incremental changes in demand on the system
  - This price signal should be sent through a charge which is “avoidable” or varies with customers’ consumption behavior

Responds to AUC staff question 1.1 to 1.3

Avoidable charges are relevant in a marginal approach to cost recovery (cont.)

The concept of avoidable charges stems from a marginal cost approach (cont.)

- The remaining costs would be recovered in a way that avoids distorting the consumption decisions that customers take in response to the efficient price signal
  - This price signal should be sent through a charge which is "non-avoidable" – or does not vary with customers' consumption behavior – to prevent distortion of their consumption decisions and to ensure total cost recovery

Responds to AUC staff question 1.1 to 1.3

The marginal cost of transmission varies by location

- Changes in customers' demands will have different impacts on transmission system costs depending on where they are located on the system
- In a distribution system, it is reasonable to assume that changes in customers' consumption decisions will have a similar effect on the distribution utility's costs, and that customers are served with similar types of infrastructure
- In a transmission system, by contrast, it is not safe to assume all customers' demands have the same impact on transmission system costs:
  - The AESO plans transmission capacity to move electricity from areas where the supply of in-merit energy exceeds demand, to areas where demand exceeds supply
  - Increasing demand in areas of surplus in-merit energy may therefore reduce transmission costs (implying a negative marginal cost); while
  - Increasing demand in areas where demand exceeds supply may increase transmission costs (implying a positive marginal cost)

Embedded cost methodology aligns costs with drivers

- In a transmission system *all charges are avoidable* (unlike in distribution system)
  - Transmission customers can and are expected to respond to transmission tariff charges
    - For example, by reducing demand at peak times, reducing overall energy use, or by reducing contract capacity (including grid defection)
    - How costs are allocated to different charges will incentivize different forms of response (or avoidance) to different degrees
- Embedded methodology aligns transmission cost drivers with transmission charges, so that response to charges occurs through the drivers that are aligned to costs
  - Variable charges that correspond to how costs have been incurred (based on how transmission system is used) align with the principle of cost causation

Recovery of fixed costs on variable charges is aligned with cost causation

- An embedded cost methodology signals to customers the long-run costs of providing transmission, reflecting whether costs were incurred historically to accommodate demand or accommodate the flow of in-merit energy
- Recovery of fixed transmission costs based on variable (or "avoidable") charges aligns with cost causation because an embedded cost methodology recovers the costs associated with the long-run drivers
  - Example: Recovering costs associated with accommodating the flow of in-merit energy through an "avoidable" energy charge reflects the long-run economic costs of energy purchased from the market

Responds to AUC question 1.5 a and d, 1.6 c and e

“Avoidance” of cost reflective tariff charges can be efficient

- Response to the preferred rate design (for example by “avoidance”) will be efficient to the degree that the tariff is cost reflective
  - Preferred rate design improves on the current tariff by better signalling the long-run costs of providing transmission
    - For instance, explicitly recognizing the costs of providing transmission in order to accommodate the flow of in-merit energy
- If customers choose to “avoid” certain costs (for example by self-supply), it is not necessarily inefficient for the system
  - Efficient if the avoided system costs of serving that customers’ self-supplied load from the grid exceed the costs incurred by the customer to self-supply over the long-run
  - There may be a possibility of inefficient self-supply decisions if the costs incurred historically are higher than the costs associated with meeting customers’ demands for electricity in the future

Responds to AUC staff questions 3.2 and 3.3

“Avoidance” of cost reflective tariff charges can be efficient (cont.)

- The transmission tariff should encourage efficient self-supply decisions and discourage inefficient self-supply by customers by better signalling the costs associated with providing transmission
  - The Alberta market framework relies on wholesale market price and tariff to send signals of costs of taking energy to reach efficient outcomes

Responds to AUC staff questions 3.2 and 3.3

Questions?

Break

3) Analysis of Self-Supply in Response to the Preferred Rate Design

Analysis of self-supply response

- Stakeholders have communicated a concern that the allocation of transmission costs under the AESO's preferred rate design creates additional opportunities for self-supply
- This section summarizes NERA's analysis of the maximum estimated customer response to the preferred rate design through self-supply, including:
  - Factors that influence self-supply decisions
  - Efficient and inefficient self-supply decisions
  - Estimates of self-supply response under preferred rate design
  - Consideration of future trends affecting self-supply decisions

For more details, see the NERA report posted on the AESO website at https://www.aeso.ca/assets/Uploads/AESO-customer-impact-report-05-25-2021.pdf

Summary

- Customer response to the preferred rate design through different self-supply decisions will improve efficiency because the preferred rate design is more cost reflective
  – Conservative estimate that self-supply could increase under the preferred rate design through a one-time adjustment of up to 2,801 GWh. This estimate is the total effect and includes dynamic responses by customers to self-supply decisions of other customers
  – This inclusive estimate reflects a shift in costs from self-supplying customers to other customers of a one time approximate 1.9 per cent of the 2019 bulk and regional costs
- Predicts an extremely limited increase in self-supply by industrial customers under the preferred rate design
  – Any change in customers' self-supply decisions that does arise will tend to result in more efficient patterns of electricity use than the current tariff
- Expect that the economics of self-supply will significantly worsen in the future due to increasing gas prices and carbon tax

Evaluating customer choice to self-supply

- From the customers' perspective, optimal decisions to self-supply balance the costs incurred to self-supply with the avoided costs of consuming power from the grid
  - Costs include generation costs, land costs, capital costs, etc
- Customers make a holistic decision of whether to self-supply based on all the benefits and avoided costs of procuring power from the grid (i.e., not just the transmission charges)
  - Avoided costs will depend on how customers use electricity and how charges are levied
- Given that self-generation decisions typically involve investment in long-lived generation assets, a customer's decision on whether to self-supply considers a forward-looking assessment of the costs of self-supply relative to the forward-looking avoided costs of consuming from the grid

Efficient and inefficient self-supply decisions

- It is not necessarily inefficient for the system if customers choose to self-supply
  - A customer's choice to self-supply may be efficient and lower the total overall costs of electricity supply as long as the tariff is cost reflective
    - A customer choosing to self-supply would **improve** efficiency if the avoided system costs of serving that customers' self-supplied load from the grid **exceed** the costs incurred by the customer to self-supply over the long-run
    - A customer choosing to self-supply would **reduce** efficiency if the avoided system costs of serving that customers' self-supplied load from the grid **are less than** the customer's incurred costs to self-supply over the long-run
- Customers rely on regulated transmission tariff and wholesale market prices to signal the total costs incurred to supply them with electricity

Efficiency of the response to a change in the tariff

- Customers may make different, and *more efficient*, self-supply decisions in response to a new tariff that is more reflective of the costs of transmission incurred to serve that customer's load
- The AESO's preferred rate design:
  - Reduces costs recovered through a charge on 12-CP in order to better meet principles of cost causation
  - Reduces the incentive for inefficient self-supply decisions taken based on current 12-CP transmission charges that exceed the costs associated with meeting coincident peaks in demand
- However, need to evaluate the remaining risk of inefficient self-supply decisions
  - Tariff recovers the current operating and historically incurred capital costs of the transmission system
  - If the costs incurred historically are higher than the costs associated with meeting customers' demands for electricity in the future, there is a risk that a tariff set to recover historical costs will cause customers to self-supply

Estimating future self-supply response

- The AESO's preferred rate design would change what customers pay for grid supplied electricity and their incentive to self-supply in different ways depending on how and when they draw power from the grid
  - Preferred rate design would recover more costs from energy-based charges than the current tariff
    - Transmission charges for customers with high load factors and high energy consumption would tend to increase
    - Customers who have previously avoided 12-CP hours could see a rise in charges since more costs are allocated to energy in all hours and fewer costs are allocated to 12-CP
    - Customers with lower load factors, or who consume at times of 12-CP tend to have lower charges

Changes in consumption in response to change in tariff

- Preferred rate design may lead customers to change how and when they use the grid:
  - Lower 12-CP charge may reduce customers’ incentive to avoid consumption at times of coincident peak, increasing use at these times
  - Lower charge on contracted demand increases customers’ incentive to hold contracted capacity (e.g., for backup), which reduces the incentive for grid defection
  - Increase in the energy charge may decrease customers’ incentive to take energy from the grid across the year
- Overall response to changes is expected to vary based on customer attributes including load factor, flexibility, etc.
  - Response will tend to be more efficient (for the customer and for the system), because preferred rate design is more cost reflective than the current tariff

Estimating customer response to preferred rate design

- Analysis of how self-supply decisions may change for industrial sites after the introduction of the preferred rate design:
  - First, assess whether and to what extent it would be economic for industrial sites to self-supply rather than procure power from the grid across the year, considering both wholesale prices and transmission tariffs
  - Then, predict actual customer responses to the change in the incentive to self-supply under preferred rate design, based on statistical estimates of how likely customers have been in the past to self-supply
    - This step accounts for other costs customers face to self-supply that we cannot observe
  - Calculate new rates including reduction in billing determinants and repeat first step using new rates

Findings on self-supply response

- We predict an extremely limited increase in self-supply by industrial customers under preferred rate design, and any change in customers' self-supply decisions that does arise will tend to result in more efficient patterns of electricity use than under the current tariff
- Self-supply is estimated to increase through a one-time adjustment (including expected dynamic response) under the preferred rate design
  - **Up to** 2,801 GWh (4.7 per cent of 2019 energy billing determinant)
    - Equivalent to a total cost shift of approximately $30 million from self-supply customers to other customers (or 1.9 per cent of 2019 bulk and regional costs)
- Estimate of self-supply response is conservative
  - Assumes capacity will be installed today even though future costs of self-supply increase relative to costs from the market (future changes in carbon taxes and gas prices)

Questions?

4) Analysis of the Short-Run Impact of the Preferred Rate Design on the Energy Market

Introduction

- Loads can respond to tariff charges in the short-run and the long-run
  - Short-run: Loads increase or decrease their consumption using existing capability
  - Long-run: Investments in self-supply, energy efficiency, flexibility, etc.
- This analysis seeks to better understand how the **short-run** response of loads to the preferred rate design will impact the energy market
  - Address concern from stakeholders that allocation of transmission costs to energy charge will lead to distortions in the wholesale energy market
- Key findings:
  - **The changes in the preferred rate design are estimated to have a minimal impact on the energy market, and may even increase efficiency in the energy market**
    - Increase to the energy charge will lead to a small reduction in efficiency
    - Reduction in the CP charge can be expected to increase efficiency

Introduction (cont.)

- This analysis isolates the energy market and therefore does not measure the overall efficiency of the electric system
  - Improving transmission cost recovery to align with cost causation principles will lead to more efficient consumption decisions
  - Some energy market impact is inevitable, as consumers can respond to tariff charges in the long-run no matter how costs are collected
- When loads that would otherwise be consuming turn off due to tariff charges, this shows up as an inefficiency in the energy market, consisting of:
  - Lost benefit to the load
  - Lost profit to the generator

Introduction (cont.)

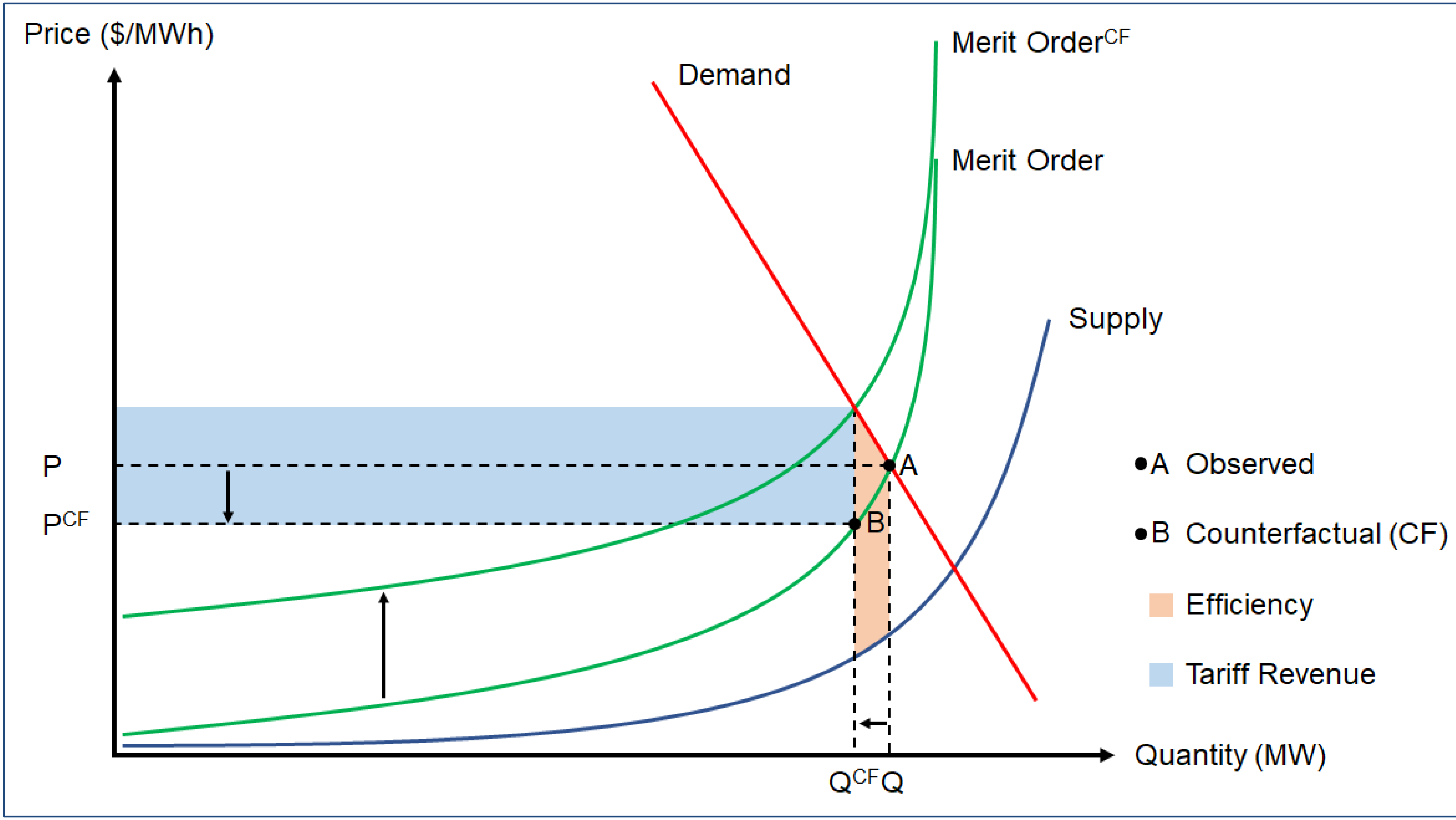
- This analysis estimates the change in energy market efficiency based on the following assumptions:
  - Approximate $9/MWh increase in the energy charge
  - Removal of the coincident peak (CP) charge
    - The AESO's preferred rate design does not remove the CP charge, but rather reduces it by about 40 per cent
    - Due to data limitations, the load response to this change cannot be accurately measured
      - *This will be discussed further*
- The AESO estimates the efficiency impact of these changes based on the response from price-responsive loads
  - Firm loads will not change their behaviour in the short-run and therefore will not impact efficiency in the energy market
- The model includes the years 2018 and 2019

Energy Charge

Method

- As a proxy for the increased energy charge, all offers to the energy market are increased by $9
  - This will increase the energy price by $9 for any given level of demand
- The response of loads to the higher energy price is estimated using historical data from eight sites identified as being price-responsive
  - In reality, loads may respond differently to tariff charges and the energy price due to hedging
- The new market equilibrium is estimated using the new, lower level of demand and the original merit order
- The efficiency loss is estimated based on the lost benefit to loads and generators on the reduced MW of demand

Illustrative example



Results

Year	Efficiency Change ($)
2018	(865,890)
2019	(1,279,615)

- A $9/MWh increase in the energy charge is estimated to create approximately $1 million in efficiency losses per year in the energy market
  – To the extent that loads are more responsive to tariff charges than to the energy price, the actual impact may be larger than this estimate

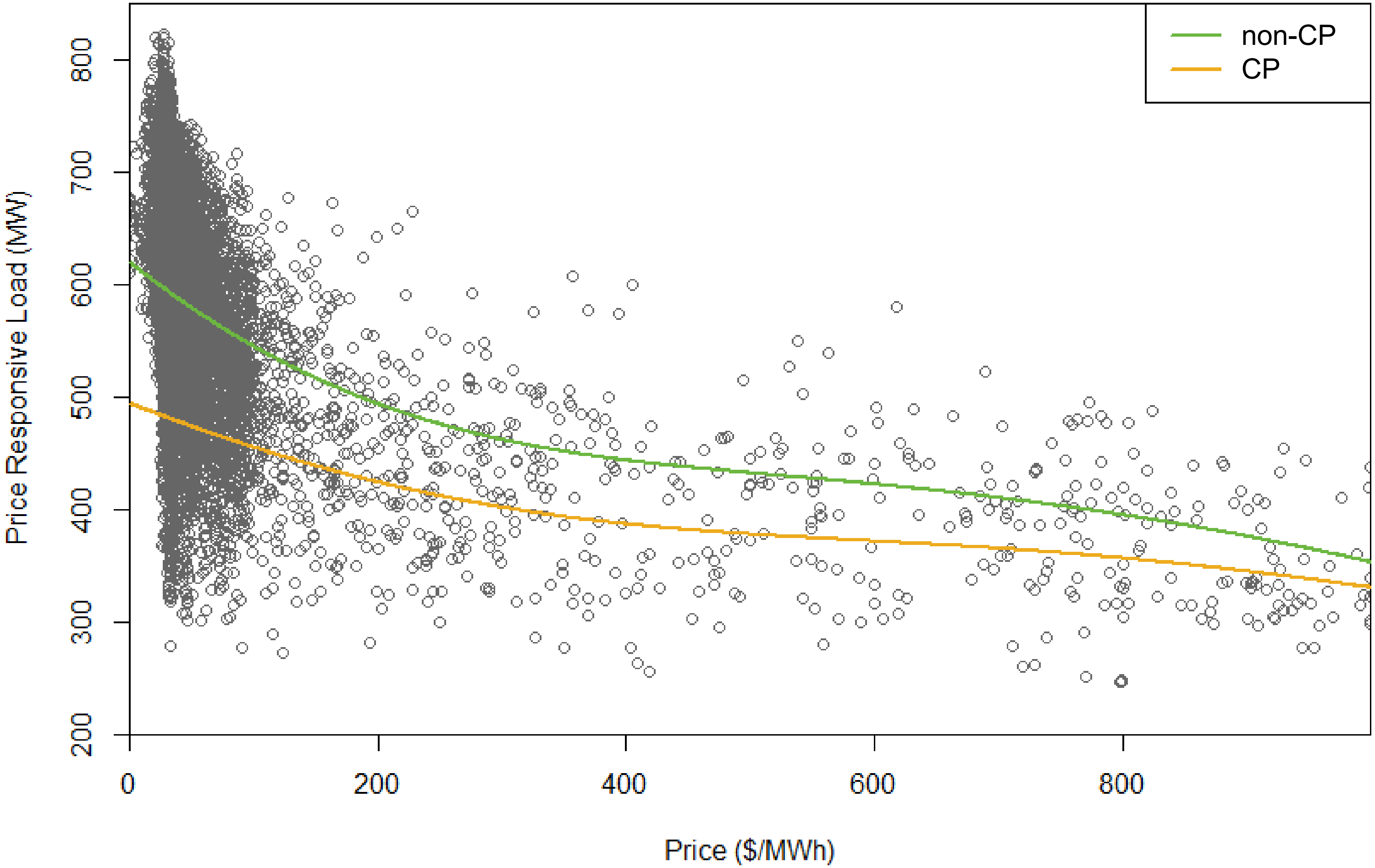
Coincident Peak Charge

Method

- Unlike the energy charge, changes to the CP charge are expected to impact the market in a small number of hours
  - Because the CP interval is uncertain until the end of the month, loads respond in multiple hours to avoid the charge
    - The day-ahead hourly demand forecast was used as an indicator of whether loads may choose to respond
    - Using a regression on load consumption data, the AESO found that 45 hours of response per month best explained the behaviour of loads
    - Twenty-eight sites were identified as responding with at least 1 MW of load on average during these 45 hours after controlling for responsiveness to price
- From these 28 sites, two demand curves were estimated using their consumption in the 45 CP-flagged hours compared to all other hours

Demand curve shift

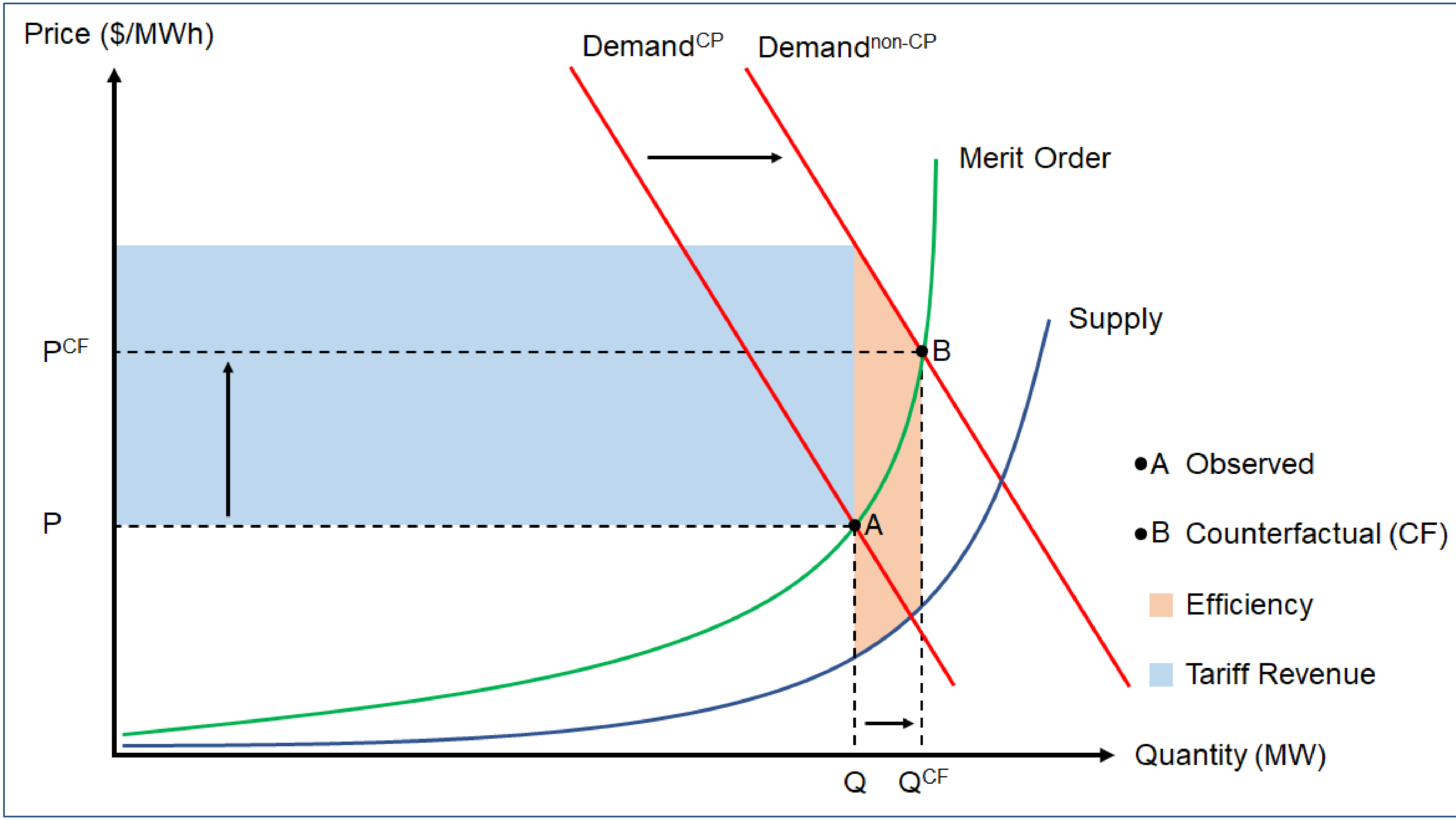
- The graph below shows the CP and non-CP demand curves, estimated using the method described in the previous slide



Method (cont.)

- The impact of removing the CP charge is determined by adjusting demand in CP-flagged hours to the level that would be expected in a non-CP hour
  - This estimates the efficiency gain from setting the charge to $0, not the level in the preferred rate design
    - The last time the CP charge was at ~$5,980/MW month as is the charge in the preferred rate design was in 2013-2015 which would not be reflective of how load responds today
- The new equilibrium is estimated using the new, higher level of demand and the merit order
- The efficiency gain is estimated using the recovered benefit to loads and generators on the MW of demand that respond to the CP charge

Illustrative example



Results

Year	Efficiency Change ($)
2018	9,548,063
2019	12,193,163

- Removing the CP charge would result in an estimated efficiency gain of ~$10 million per year in the energy market
- The impact of the preferred rate design will depend on how the response from loads changes compared to the status quo
  - Both the reduced charge and the change to a 5-year average billing determinant would reduce the incentive to respond, which would recover some lost efficiency

Findings

- The efficiency impact of the proposed energy charge is estimated to be minimal
  - Based on 2019 average system load of 7,030 MW, a $9/MWh increase in the energy charge is estimated to collect over $500 million in revenue with an efficiency loss of ~$1 million (0.002 per cent)
- The current CP charge is estimated to create inefficiencies that are an order of magnitude higher than the proposed energy charge
  - If loads consume more during coincident peak times in response to the preferred rate design, these inefficiencies would be reduced
- Even if the impact of the energy charge is not offset by the change to the CP charge, the preferred rate design will still be more efficient from the perspective of the overall system

Questions?

Next Steps

Engagement schedule

- **June 10, 2021 |** Stakeholder feedback due on questions set out in Stakeholder Comment Matrix Session 6A
- **June 24, 2021 |** Host stakeholder engagement session to discuss AESO's targeted mitigation discussion outcomes, Session 5B (DOS) and Session 6A stakeholder feedback, and areas of alignment
- **July 9, 2021 |** Stakeholder feedback due on questions set out in Stakeholder Comment Matrix Session 6B
- **October 2021 |** File application with AUC for public proceeding and approval

Session feedback

- We want to thank you for attending the Bulk and Regional Tariff Design Stakeholder Engagement Session 6A and we would appreciate your feedback on the session
- Launch Zoom poll
- We invite all interested stakeholders to provide their input on this session via the questions set out in the **Stakeholder Comment Matrix Session 6A on or before June 10, 2021**. The matrix will be available on May 27, 2021 on our website at www.aeso.ca
  - Path: Stakeholder Engagement > Rules, standards and tariff consultations > Tariff (filter) > Bulk and Regional Tariff Design > Session 6A | June 3, 2021

Next session

- Following Session 6A, the AESO will host Session 6B on **June 24, 2021.** Registration details will be available in early June on the AESO website at www.aeso.ca
- **Session 6B purpose**
  - The purpose of the session is to engage stakeholders in a discussion of the AESO's targeted mitigation discussion outcomes, Session 5B (DOS) and Session 6A stakeholder feedback, and areas of alignment
- **Session 6B objectives**
  - Provide an overview and seek stakeholder input on the outcomes of the targeted mitigation engagement
  - Share our learnings and seek stakeholder input on Session 5B (DOS) and Session 6A stakeholder feedback and areas of alignment
  - Present and discuss implementation considerations
  - Seek to understand outstanding stakeholder concerns

Questions?

Contact the AESO

– ***Twitter:*** *@theAESO*
– ***Email:*** *tariffdesign@aeso.ca*
– ***Website:*** *www.aeso.ca*
– Subscribe to our stakeholder newsletter

Thank you

Appendix – Acronyms

Acronyms

- AGF = Aggregated Generating Facilities
- AIES = Alberta Interconnected Electric System
- AIL = Alberta internal Load
- ARS = Alberta Reliability Standards
- AS = Ancillary Services
- AUC = Alberta Utilities Commission
- BTF = Behind-The-Fence
- CP = Coincident Peak
- DFO = Distribution Facility Owner
- DOS = Demand Opportunity Service
- DTS = Demand Transmission Service
- EAL = ESBI Alberta Limited (Transmission Administrator prior to the formation of the AESO)
- EEA = Energy Emergency Alert
- GTA = General Tariff Application
- IOS = Import Opportunity Service
- LdF = Load Factor
- MSA = Market Surveillance Administrator
- OR = Operating Reserve
- PILON = Payment in Lieu of Notice
- POD = Point-of-Delivery
- SASR = System Access Service Request
- VER = Variable Energy Resource
- XOS = Export Opportunity Service