

Bulk and Regional Tariff Design Technical Information Session

October 14, 2020

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.

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- The AESO's top priorities are the health and well-being of our employees and stakeholders and continuing to meet the electricity needs of all Albertans
- All business meetings with external stakeholders will be via phone or webinar indefinitely (this includes stakeholder engagement sessions)
- Based on stakeholder feedback, the AESO's own security assessment and the use of Zoom for governments, post-secondary institutions and other companies, the AESO has decided for now to continue using Zoom for our stakeholder engagements until such time that face-to-face engagements are allowed
- The AESO will continue to monitor developments and provide updates to our stakeholders as necessary
- For additional information, please visit the AESO website at www.aeso.ca and follow the path Stakeholder Engagement > COVID-19

How to Ask Questions

- All attendees join the webinar in listen-only mode and the host will have attendee cameras disabled and microphones muted
- When asking or typing in a question, please state
 - **The organization you work for and your first and last name**
- Two ways to ask questions if you are accessing the webinar using your computer or smartphone
 - If you would like to ask a question during the Q&A portion, click the icon to raise your hand 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 and then you can ask your question. Your name will appear on the screen but your camera will remain turned off.
 - You can also ask questions by typing them into the Q&A window. Click the “Q&A” button next to “Raise Hand.” You’re able to up-vote questions that have been already asked.

- Using a 2-in-1/PC/MAC Computer
 - Hover your cursor over the bottom area of the Zoom app and the Controls will appear.
 - Click “Raise Hand” and the host will be notified that you would like to ask a question.
 - 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.
- Using a Smartphone
 - Tap “Raise Hand.” The host will be notified that you’ve raised your hand.
 - Tap “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.
- Phone controls for attendees
 - To raise your hand, on your phone's dial pad, hit *9. The host will be notified that you've raised your hand.
 - To toggle between mute and unmute, on your phone's dial pad, hit *6.

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

Time	Agenda Item	Presenter
2:00 – 2:15	Welcome, Introduction, Purpose and Session Objectives	AESO
2:15 – 4:30	<p>Group Question and Discussion Period</p> <ul style="list-style-type: none">• Re-present technical details of the rate bookends• Present further rate information on sample load shapes, including the calculation of an invoice under the rate bookends• Walk through rate impact tool with varying load shape	AESO

Registration (as of October 13, 2020)

- Alberta Direct Connect Consumers Association (ADC)
- Alberta Newsprint Company (ANC)
- AltaLink Management Ltd.
- ATCO Electric
- BECL and Associates Ltd.
- Best Consulting Solutions Inc.
- Boost Energy Ventures
- Brubaker and Associates Inc. (on behalf of ADC)
- Canadian Renewable Energy Association (CanREA)
- Capital Power Corporation
- Cenovus Energy
- Chapman Ventures Inc.
- Chymko Consulting (Cities of Red Deer and Lethbridge)
- City of Lethbridge
- City of Medicine Hat
- City of Red Deer
- CNRL
- Consumers Coalition of Alberta (CCA)
- Customized Energy Solutions
- CWSAA
- DePal Consulting Limited
- Dow Chemical Canada ULC
- Enbridge
- Enel NA
- Energy Management Program, Haskayne School of Business
- Energy Storage Canada
- ENMAX Corporation
- EPCOR Distribution & Transmission Inc.
- FortisAlberta
- Heartland Generation Ltd.
- Imperial Oil / ExxonMobil Canada / XTOC
- Industrial Power Consumers Association of Alberta (IPCAA)
- Kalina Power
- Kanin Energy
- Lionstooth Energy Inc.
- Millar Western Forest Products Ltd.
- NextEra Insights
- Power Advisory LLC
- Power Grid Specialists Corp.
- RMP Energy Storage
- Rodan Energy
- Signalta Resources Limited
- Solas Energy Consulting Inc.
- Suncor Energy Inc.
- The Office of the Utilities Consumer Advocate (UCA)
- TC Energy
- TransAlta Corporation
- URICA Asset Optimization
- Whitecourt Power
- Wolf Midstream Inc.

Overview of Engagement Process

OUR ENGAGEMENT PRINCIPLES

Inclusive and Accessible

Strategic and Coordinated

Transparent and Timely

Customized and Meaningful

Overall approach for bulk and regional tariff design stakeholder engagement

The AESO intends to:

- i. Engage with stakeholders to allow stakeholders' needs and interests to be consistently, transparently and meaningfully considered in the development of a rate design proposal for bulk and regional cost recovery;
- ii. Engage with stakeholders regarding the objectives to be examined and evaluated in the development of a rate design proposal for bulk and regional cost recovery;
- iii. Supply stakeholders with analysis tools for bulk and regional cost recovery impact analysis;
- iv. Seek and identify for the Alberta Utilities Commission (AUC) areas of agreement and disagreement in the AESO rate design proposal to accelerate the regulatory approval process; and
- v. File with the AUC an application for bulk and regional rate design by March 31, 2021.

Overview of process schedule

Session 1 March 13, 2020	Session 2 Sept. 24, 2020	Session 3 Oct. 22, 2020	Session 4 Dec. 2, 2020	Session 5 Jan. 28, 2021
Session objectives	Session objectives	Session objectives	Session objectives	Session objectives
<ul style="list-style-type: none"> • Present rate design options for bulk and regional cost recovery with rate objectives assessment • Provide rate design analysis tools • Review, respond to clarifying questions and collect initial input on options 	<ul style="list-style-type: none"> • Review and gain acceptance on process and approach to complete a rate design • Understand current state rate design • Reconfirm tariff rate design objectives and balance of trade-offs • Understand rate design bookends • Identify initial implications of rate design bookends • Understand energy storage treatment options and considerations • Provide technical clarity around rate design bookends 	<ul style="list-style-type: none"> • Stakeholders to present and discuss alternative rate design options, including energy storage options and implications • Understand which rate design options stakeholders support and why 	<ul style="list-style-type: none"> • Clarify and refine the preferred rate design, including energy storage treatment • Discuss and evaluate mitigation options • Begin to discuss implementation considerations 	<ul style="list-style-type: none"> • Present and collect feedback on the emerging application (to be filed by March 31, 2021) • Share and discuss the implications of the rate design proposal and mitigations • Understand outstanding stakeholder concerns

- Session purpose
 - The purpose of this technical information session is to help ratepayers understand the impacts of the rate design bookends presented by the AESO on September 24, 2020 (the “rate bookends”) on their invoices. The AESO will provide technical information and answer questions to enable continued dialogue regarding the rate bookends at future stakeholder sessions.
- Session objectives
 - Ensure stakeholders understand the mechanics of the rate bookends;
 - Enable stakeholders to evaluate the impacts of the rate bookends on their sites;
 - Assist stakeholders in assessing the materiality of changes to their invoices; and
 - Ensure stakeholders are equipped to present and/or understand rate design options at the October 22, 2020 stakeholder session.

Current ISO Tariff – Bulk and Regional Monthly Coincident Peak (12-CP)

Current ISO tariff billing



Invoice Number: XXXX-2020-08

2500, 330 5th Avenue SW
 Calgary, AB T2P 0L4
 Phone Number: (403)539-2450
 FAX Number: (403)539-2949
 GST #: 886914357

Period Start: August 1, 2020
 Period End: August 31, 2020
 Statement Date: September 22, 2020
 Cash Settlement Date: September 29, 2020
 Wire Instructions: Bank of Montreal
 Transit #:
 Account #:

Description of Charges

Demand Transmission Services Charges

- Connection Charge
- Operating Reserve Charge
- Voltage Control Charge
- Other System Support Services Charge
- Constraint Mitigation Charge
- Rider C Connection Charge
- Rider C Operating Reserve Charge
- Rider C Voltage Control Charge
- Rider C Other System Support Services Charge
- Rider C Constraint Mitigation Charge
- Rider F Balancing Pool Consumer Allocation

DTS Total Charges

Description of Charges	MWh	Total
Demand Transmission Services Charges	XX,XXX	00000000.00

Bulk, Regional and POD Charges

Billing Capacity = Maximum (highest metered demand, 90% contract, 90% ratchet)

ACMD = Actual Coincident Metered Demand
 TCMD = Tariff Coincident Metered Demand

Alberta Electric System Operator - Invoice Details Export

Customer Name:	XXXX
Invoice Number:	XXXX-2020-08
Invoice Start Date:	2020-08-01
Invoice End Date:	2020-08-31
Invoice Creation Date:	2020-09-16

Account	Prod Mon	Reversed	Cross Ref.	Account N	Contract S	Contract F	Contract C	Min Capac	Actual HV	Tariff HM	Bill Capacity	HSMD	HSMD Dat	ACMD	TCMD	Bulk Sys
DTS	xxx	2020-08		xxx	9/1/2018											

Bulk System Costs – Recovery Mechanism – 2020 ISO tariff update



Description	Functionalization Ratio ¹	Forecast \$ 000 000	Allocation to DTS	
			Allocator %	Amount \$ 000 000
1 Wires				
2 Bulk System	51.7%	\$ 990.8	100%	\$ 990.8
3 Regional System	24.6%	471.2	100%	471.2
4 Point of Delivery	23.7%	454.7	100%	454.7
5 Total Wires	100.0%	\$ 1,916.7	100%	\$ 1,916.7

Line No.	Description	DTS Amount [Table C-3] \$ 000 000	Classification to Rate Component ¹										
			Coincident Demand		Non-Coincident Dem'd		Flat Usage		Varying Usage		Customer		
			Allocator %	Amount \$ 000 000	Allocator %	Amount \$ 000 000	Allocator %	Amount \$ 000 000	Allocator %	Amount \$ 000 000	Allocator %	Amount \$ 000 000	
1 Wires													
2 Bulk System		\$ 990.8	93.4%	\$ 925.9	-	-	6.6%	\$ 64.9	-	-	-	-	-
3 Regional System		471.2	-	-	89.5%	421.9	10.5%	49.3	-	-	-	-	-
4 Point of Delivery		454.7	-	-	83.8%	381.2	-	-	-	-	16.2%	73.5	-
5 Total Wires		\$ 1,916.7	48.3%	\$ 925.9	41.9%	\$ 803.2	6.0%	\$ 114.2	-	\$ -	3.8%	\$ 73.5	-

No.	Description	Table C-7 Reference	Costs, \$ 000 000			Billing Determinant		Rate					
			Wires	Non-Wires	Total	Quantity	Unit	Wires	Non-Wires	Total	Unit		
1	DTS Bulk System Charge												
2	Coincident Demand Charge	Lines 3, 7-10	\$ 925.9	\$ 60.4	\$ 986.3	91,210.9	MW-months	\$ 10,151.00	\$ 663.00	\$ 10,814.00	/MW		
3	Flat Usage Charge	Lines 3, 7-10	64.9	4.2	69.2	61,157.0	GWh	\$ 1.06	\$ 0.07	\$ 1.13	/MWh		

- Non-wires portion is the wires portion of Other Industry, G&A and DTS revenue offsets costs

Regional System Costs – Recovery Mechanism – 2020 ISO tariff update



Description	Functionalization Ratio ¹	Forecast \$ 000 000	Allocation to DTS	
			Allocator %	Amount \$ 000 000
1 Wires				
2 Bulk System	51.7%	\$ 990.8	100%	\$ 990.8
3 Regional System	24.6%	471.2	100%	471.2
4 Point of Delivery	23.7%	454.7	100%	454.7
5 Total Wires	100.0%	\$ 1,916.7	100%	\$ 1,916.7

Line No.	Description	DTS Amount [Table C-3] \$ 000 000	Classification to Rate Component ¹									
			Coincident Demand		Non-Coincident Dem'd		Flat Usage		Varying Usage		Customer	
			Allocator %	Amount \$ 000 000	Allocator %	Amount \$ 000 000	Allocator %	Amount \$ 000 000	Allocator %	Amount \$ 000 000	Allocator %	Amount \$ 000 000
1 Wires												
2 Bulk System		\$ 990.8	93.4%	\$ 925.9	-	-	6.6%	\$ 64.9	-	-	-	-
3 Regional System		471.2	-	-	89.5%	421.9	10.5%	49.3	-	-	-	-
4 Point of Delivery		454.7	-	-	83.6%	381.2	-	-	-	-	16.2%	73.5
5 Total Wires		\$ 1,916.7	48.3%	\$ 925.9	41.9%	\$ 803.2	6.0%	\$ 114.2	-	\$ -	3.8%	\$ 73.5

No.	Description	Table C-7 Reference	Costs, \$ 000 000			Billing Determinant		Rate				
			Wires	Non-Wires	Total	Quantity	Unit	Wires	Non-Wires	Total	Unit	
4	DTS Regional System Charge											
5	Billing Capacity Charge	Lines 4, 7-10	421.9	27.5	449.5	160,561.5	MW-months	\$ 2,628.00	\$ 172.00	\$ 2,799.00	/MW	
6	Flat Usage Charge	Lines 4, 7-10	49.3	3.2	52.5	61,157.0	GWh	\$ 0.81	\$ 0.05	\$ 0.86	/MWh	

- Non-wires portion is the wires portion of Other Industry, G&A and DTS revenue offsets costs

Questions?

Bookends A and B Case Studies

Proposed bookend A and bookend B technical summary (no modifications)

Cost Recovery	Bookend A Fixed Charge	Bookend B Peak Charge
Cost recovery mechanism for <u>all network</u> costs:		
Inter-regional (between regions)	Billing capacity (highest metered demand, contract demand, or maximum of both)	Summer and winter weekday CP (approx. 120 hours annually) at time of region peak
Intra-regional (within region)		Billing capacity
<u>Estimated Charge:</u>		
Billing capacity	\$9,700 / MW (est)	\$3,100 /MW (est)
Coincident Regional Peak (summer and winter weekday daily peak)		\$1,000 /MW (est at 120hrs)

Initial analysis of rate impacts (without modifications or mitigation)

	Approximate Amount of Contract Capacity (MW)	Current Total ISO Tariff Charges	Total ISO Tariff Charges Under Bookend A – Fixed Charge	Total ISO Tariff Charges Under Bookend B – Peak Charge
		Transmission Revenue Requirement		
Heavy 12-CP Responders	1,500 MW	\$80 million	\$184 million +\$104 million +130%	\$165 million* +\$85 million +100%
Medium 12-CP Responders	380 MW	\$40 million	\$51 million +\$11 million +35%	\$45 million* +\$5 million +20%
All other customers	11,120 MW	\$2,155 million	\$2,040 million -\$113 million -5%	\$2,065 million -\$90 million -4%
Total	13,000 MW		\$2,276 million	

- Heavy 12-CP Responders
 - Rate DTS customers with little or no bulk system charges
 - In relation to billing capacity, 12-CP response results in approximately 80 to 100% bulk system charge avoidance (1 – 12-CP MWs / Billing capacity MWs)
 - Responders include:
 - ISDs (use the grid for back-up)
 - DCGs (result in 12-CP response to maximize DCG credits); and
 - Price-responsive load (are willing to reduce their loads to reduce transmission costs)
- Medium 12-CP Responders
 - Customers with some bulk system charges
 - Approximately 60 to 80% bulk system charge avoidance
 - Includes ISDs, DCGs, price-responsive load
- Low 12-CP Responders (“All other customers”)
 - From 0 to 60% of bulk system charge avoidance
 - Residential, commercial, small industrial

- Case studies presented today are working examples for illustrative purposes only
- Case studies do not use profiles of specific responders, but are based on representative profiles by responder type as working examples
- Results are based on Bookends A and B as presented by the AESO in the September 24 stakeholder session, which may be modified as a result of ongoing stakeholder engagement and assessment
- All sites have unique characteristics that result in unique bill impacts
 - Hourly load profiles are important
 - Generalizations will not describe or explain many sites impacts

- **Case Study 1**
 - Site located in the Northwest
 - Site description (100 MW, 55% Load Factor (LF))
 - Heavy 12-CP responder 87 – 95%
 - Price responsive load
- **Case Study 2**
 - Site located in the Northeast
 - Site description (20 MW, 5% LF)
 - Heavy 12-CP responder 90 – 97%
 - Standby load
- **Case Study 3**
 - Site located in the Northwest
 - Site description (42 MW, 75% LF)
 - Medium to heavy 12-CP responder 75% (2018) and 87% (2019)
 - Price responsive load

- **Case Study 4**

- Site located in the Central Region
- Site description (10 MW, 10% LF)
- Heavy 12-CP responder 85%
- DFO substation with DCG

- **Case Study 5**

- Site located in the Edmonton Region
- Site description (45 MW, 60% LF)
- Low 12-CP responder 23%
- Residential, commercial, small industrial mix

Case studies: Bookends A and B

Case Study	Current Annual Individual ISO Tariff Charges	Bookends A and B Annual Individual ISO Tariff Charges			
		Bookend A		Bookend B	
		Charges	% Change	Charges	% Change
1	\$5,430,000	\$12,610,000	+132%	\$14,180,000	+161%
2	\$810,000	\$2,520,000	+211%	\$850,000	+5%
3	\$2,550,000	\$4,740,000	+86%	\$5,790,000	+127%
4	\$530,000	\$1,200,000	+126%	\$500,000	-6%
5	\$6,520,000	\$5,270,000	-19%	\$6,030,000	-8%

*Unique sites will have unique impacts

Spreadsheet

Questions?

Illustrative Example of Bookends A and B Modification

List of modifications or levers – Impacts on objectives

- Coincident peak by time of region peak or system peak
- Modified DOS Term/Standby rate
- More or less coincident peak hours for Bookend B
- Variations on definition of billing capacity
- Load retention rates
- Transitional implementation
 - From 12 hours to 120 hours in 4 years
 - Adjusting functionalization %
- Alternate bucketing or functionalization of network costs
- Others . . .

Legend:



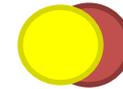
Achieves objective



Potentially achieves objective with modification



Partially achieves objective



Potentially partially achieves objective with modification



Does not achieve objective

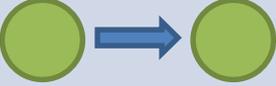
Illustrative examples of Modifications to bookends A and B

Case Study	Current Annual Individual ISO Tariff Charges	Bookends A and B Annual Individual ISO Tariff Charges			
		Bookend A		Bookend B	
		Charges	% Change	Charges	% Change
1	\$5,430,000	\$12,610,000	+132%	\$14,180,000	+161%
2	\$810,000	\$2,520,000	+211%	\$850,000	+5%
3	\$2,550,000	\$4,740,000	+86%	\$5,790,000	+127%
4	\$530,000	\$1,200,000	+126%	\$500,000	-6%
5	\$6,520,000	\$5,270,000	-19%	\$6,030,000	-8%

Case Study	Current Annual Individual ISO Tariff Charges	Illustrative Example Modification to Bookends A and B Annual Individual ISO Tariff Charges			
		Bookend A (with modification)		Bookend B (with modification)	
		Charges	% Change	Charges	% Change
1	\$5,430,000	\$6,970,000	+28%	\$7,900,000	+45%
2	\$810,000	\$2,700,000	+233%	\$840,000	+4%
3	\$2,550,000	\$2,620,000	+3%	\$4,730,000	+85%
4	\$530,000	\$1,290,000	+143%	\$510,000	-4%
5	\$6,520,000	\$5,650,000	-13%	\$6,040,000	-7%

*Unique sites will have unique impacts

Bookend A modification: Modified DOS Term or Interruptible

Design element modification	Impact	Assessment
Interruptible Rate – 10,800 MWs annually are “interruptible” or non-firm:		
Cost responsibility		Introducing or expanding on DOS Term to align with certain customers’ value of their grid connection. Contrasted with facilities built in the past to serve these customers value of the grid connection increases
Efficient price signals		ISO tariff offers a product that ensures that customers provide clear requirements to the ISO and results in better price signals alignment with planning
Minimal disruption		Aligning the ISO tariff products to how the customers use their grid connection can reduce the disruption to some high responder price responsive sites. But interruptible rate does not minimize disruption for all impacted sites
Simplicity		Some additional complexity from Bookend A but not impactful considering ISO tariff already has DOS term rate
Innovation and flexibility		Additional flexibility provided with additional rate class

Bookend B modification

“120-CP” at time of system peak

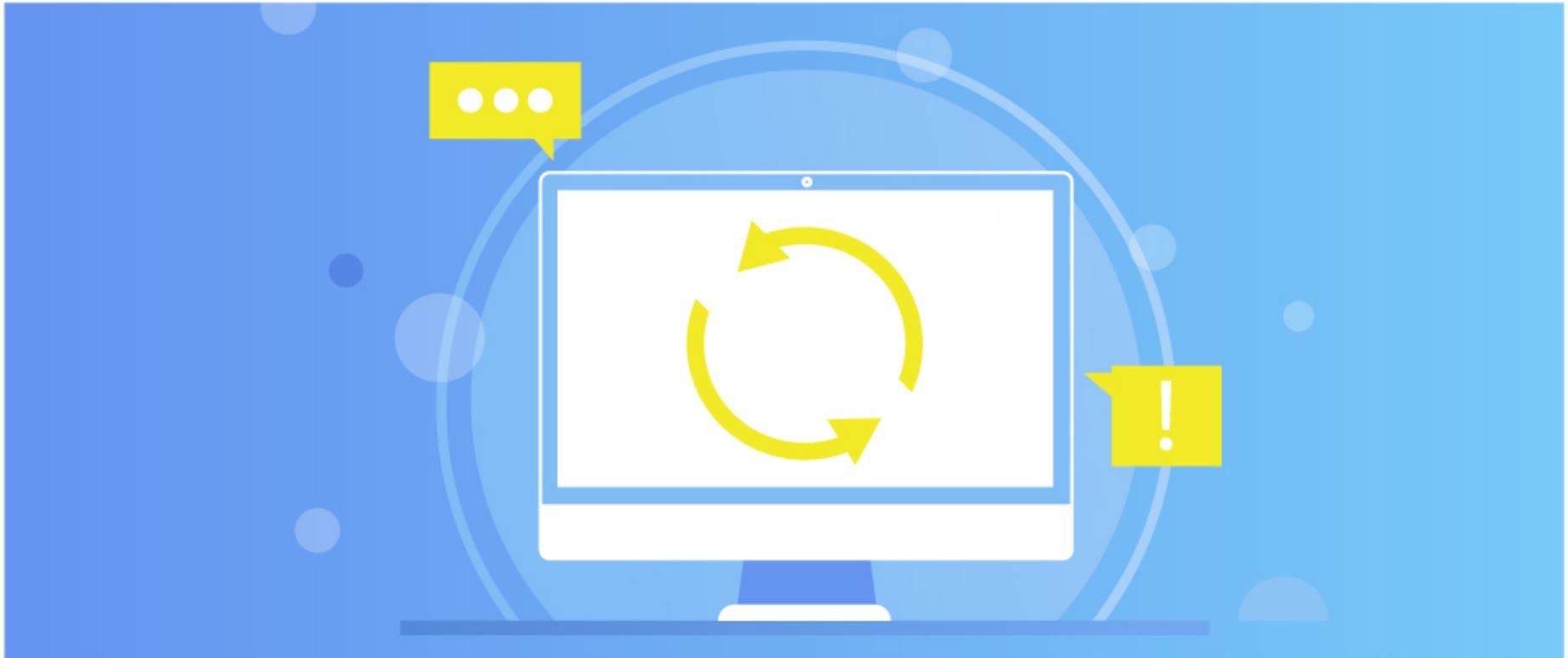
Design element modification	Impact	Assessment
120-CP at time of system peak, not time of region peak:		
Cost responsibility		No change
Efficient price signals		A pricing signal to reduce load at time of regional stress may better align with planning signals (reduce future costs).
Minimal disruption		Closer alignment with current state 12-CP will minimize disruption to sites currently avoiding system peak.
Simplicity		Increase in simplicity by using one system peak, rather than six region peaks. Current information regarding system peak timing already exists.
Innovation and flexibility		Additional flexibility may be provided if the ISO tariff sends one peak timing signal, rather than six (regions).

Questions?

Session Close-out and Next Steps

- We want to thank you for attending the Bulk and Regional Tariff Design Technical Information Session and we would appreciate your feedback on the session
- To limit stakeholder fatigue, we are modifying how we collect your initial feedback on the session by conducting a Zoom poll during the session rather than emailing you a short session survey following the session. The questions remain the same
- Poll questions:
 - The purpose of the session was clear
 - The information was presented in a clear manner
 - The session was valuable

- The next session (Session 3) will be hosted on **Oct. 22, 2020**. Registration details are available on our website.
 - Path: Stakeholder Engagement > Rules, Standards and Tariff > Tariff (filter) > Bulk and Regional Tariff Design > Oct. 22, 2020 Session 3
- The purpose for Session 3 is for stakeholders to propose rate design option alternatives. The session objectives include:
 - Stakeholders to present and discuss alternative rate design options, including energy storage options and implications
 - Understand which rate design options stakeholders support and why



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Thank you