

The purpose of the quarterly report is to provide stakeholders with an update on the Alberta Electric System Operator's (AESO) budget and priorities identified in its [2023 Business Plan and Budget \(Business Plan\)](#). The reader of this report should reference the Business Plan published on the AESO's [website](#) for additional information to fully understand the various updates provided.

Priorities to Enable Transformation in 2023

	Priority	Update (Current)
1	Assess specific implications of carbon policy implementation mechanisms on the electricity sector to provide insights to government and industry	<ul style="list-style-type: none"> Continued monitoring of, and participation in, Environment and Climate Change Canada (ECCC) stakeholder process for <i>Clean Electricity Regulation (CER)</i> development Consideration of potential carbon policy impacts in development of the Long-Term Outlook
2	Identify required market initiatives to support long-term sustainability and competitiveness of the energy-only market structure, based on output from carbon policy analysis and assessments	<ul style="list-style-type: none"> Market Pathways initiative engagement with Executive Working Group summarized at AESO Stakeholder Symposium on November 30, 2023 Market Recommendation submitted to Minister of Affordability and Utilities by February 1, 2024
3	Assess different fleet scenarios (from carbon policy analysis), and options to implement (technical requirements, market design changes, and new ancillary service products)	<ul style="list-style-type: none"> Published the AESO 2023 Reliability Requirements Roadmap (R3) in Q1 2023 and held stakeholder information session Procured Frequency Response services and additional LSS to support frequency during interconnected and islanded situations Initiated Fast Frequency Response Services Procurement, request for expression of interest underway. Initiated development of Inverter Based Resource requirements Initiated development of Electromagnetic Transient modeling requirements Increased regulating reserves to improve balancing performance
4	Implement Energy Storage (ES) and Distributed Energy Resources (DER) integration	<ul style="list-style-type: none"> Energy Storage ISO rules filed with, and approved by, the Alberta Utilities Commission (AUC) in Q2 Energy Storage Tariff working group concluded, efforts shifted to update to the Demand Opportunity Service (DOS) Rate Published updated 2023 Plan for DER Roadmap Integration Activities AESO has deferred moving forward with the Proposed OR Market Review Rule Amendments until such time

	Priority	Update (Current)
		as there is clarity regarding longer-term market changes that may be required
5	Streamline the connection process	<ul style="list-style-type: none"> • System Access Service Request (SASR) acceptance for Cluster Assessment #1 was implemented on April 3, 2023. The intake window for Cluster Assessment #1 closed at the end of August 2023 • The intake window for Cluster Assessment #2 began on September 1, 2023 (it will be open until May 31, 2024) • Implementation of the inaugural cluster studies launched in September 2023 as planned • Stage 1 of Cluster Assessment #1 process is successfully initiated and completed
6	Ensure staffing requirements can effectively deliver the AESO's priorities to enable transformation	<ul style="list-style-type: none"> • Reallocation and prioritization of new AESO hires and existing staff to deliver on transformation priorities • Additional staff recruited and hired to ensure the AESO has the capability and capacity to deliver on priorities (some of these costs offset by connection revenue)
7	Manage costs and effectively implement policies	<ul style="list-style-type: none"> • Continued focus on system optimization through use of remedial action schemes, network reconfigurations, line upgrades and power flow controls, providing locational signals (such as capability maps), milestones in system planning, and assessment of dynamic line rating opportunities

Financial Update – As of December 31, 2023

Transmission Operating Costs (\$ million)

	2023 Actual	2023 Forecast	2022 Actual
Wires costs	1,885.7	1,918.3	1,933.8
Operating reserves	370.0	265.5	494.1
Transmission line losses	285.4	183.8	332.7
Other ancillary service costs	39.4	37.5	41.2
Total Transmission Operating Costs	2,580.5	2,405.1	2,801.8

Numbers may not add due to rounding

Wires costs – Wires costs represent the amounts paid primarily to transmission facility owners (TFOs) in accordance with their Alberta Utilities Commission (AUC) approved tariffs and are not controllable costs of the AESO.

Wires costs year-to-date are 1.7 per cent lower than forecast primarily due to AUC decisions on tariff applications and prior years' deferral account adjustments.

Operating reserves – Operating reserves are generating capacity or load that is held in reserve and made available to the System Controller to manage the transmission system supply-demand balance in real time. Operating reserves are procured through an online, day-ahead exchange, where offer prices are indexed to the pool price. While the prices of operating reserves procured through the online exchange are indexed to the pool price, changes to the average pool price do not result in proportional changes to the operating reserve costs; the pool price for each hour has a significant impact on the operating reserve costs for that hour.

The cost of operating reserves is impacted by actual volumes, hourly pool prices and operating reserve prices. Operating reserve costs year-to-date are 39.4 per cent higher than forecast primarily due to the impact of a higher average pool price than forecast, more than offsetting the impact of lower volumes than forecast. The average hourly pool price of \$134 per megawatt hour (MWh) year-to-date is 42.6 per cent higher than the forecast of \$94 per MWh. Operating reserve volumes financially settled year-to-date are 6,491 gigawatt hours (GWh) compared to the forecast of 6,848 GWh, representing a 5.2 per cent decrease.

Transmission line losses – Transmission line losses represent the volume of energy that is lost as a result of electrical resistance on the transmission system. Volumes associated with line losses are determined through the energy market settlement process as the difference between generation and import volumes, less consumption and export volumes.

The hourly volumes of line losses vary based on load and export levels, generation (baseload, peaking units and imports) available to serve load, weather conditions, and changes in the transmission topology. System maintenance schedules, unexpected failures, dispatch decisions on the Alberta Interconnected Electric System (AIES), and short-term system measures (such as demand response) may also affect the volume of losses. The value of line losses is calculated based on the hourly pool price.

The cost of transmission line losses year-to-date is 55.3 per cent higher than the forecast due to the impact of a 42.6 per cent higher average pool price, as well as actual line loss volumes year-to-date of 2,232 GWh compared to the forecast of 1,906 GWh, representing a 17.1 per cent increase.

Other ancillary services costs – The AESO procures other ancillary services for the secure and reliable operation of the AIES. These services are procured through a competitive procurement process where possible, or in instances where such procurement processes may not be feasible, through bilateral negotiations.

Other Ancillary Services Costs (\$ million)			
	2023 Actual	2023 Forecast	2022 Actual
Load shed service, Fast frequency response, Voluntary load curtailment program and Transferred frequency response	23.1	26.6	30.7
Transmission must-run – Contracted and Conscripted	5.4	4.3	3.3
Reliability services	2.9	2.9	2.9
Black start	2.6	2.7	2.5
Transmission constraint rebalancing	5.4	1.0	1.8
Total Other Ancillary Services	39.4	37.5	41.2

Numbers may not add due to rounding

Load Shed Service (LSS) is interruptible load that can be armed to trip, either automatically or manually, on the loss of the Alberta–British Columbia intertie to allow for increased import available transfer capability (ATC). LSS is also utilized to restore the Most Severe Single Contingency (MSSC) limit while the AIES is weakly connected or islanded from the rest of the Western Interconnection. LSS costs are impacted by volume availability, contract prices and AIES requirements for arming and tripping. LSS costs year-to-date are lower than forecast largely due to a decrease in arming requirements.

Fast frequency response (FFR) service is based on LSS, but has been adapted for new technologies, such as energy storage. Forecasted FFR costs for 2023 related to the FFR Pilot, which included two service providers and expired in March. Subsequently, declining frequency on the grid accelerated the need for ongoing FFR services and the AESO entered into new FFR contracts with effective dates of June and September 2023. FFR costs year-to-date are higher than forecast as the new contracts were unanticipated at the time the forecast was prepared and therefore not included in the forecast approved.

The voluntary load curtailment program (VLCP) supports system reliability by providing voluntary curtailable load during periods of energy emergency alerts.

Transferred frequency response (TFR) is a product which helps to satisfy the AESO's frequency obligation within the Western Electricity Coordination Council (WECC). The agreement was effective September 2023 and was not included in the 2023 forecast.

Transmission must-run (TMR) occurs when generation is required to mitigate the overloading of transmission lines associated with line outages, system conditions in real time or the loss of generation in an area. In circumstances when this service is required for an unforeseeable event and there is no contracted TMR, non-contracted generators may be dispatched to provide this service (referred to as conscripted TMR). TMR costs year-to-date are \$1.1 million or 25.6 per cent higher than forecast, primarily due to an increase in conscripted TMR events resulting from the many forest fires across the province.

Reliability services are provided through an agreement with Powerex Corp. for grid restoration balancing support in the event of an Alberta blackout and emergency energy in the event of supply shortfall.

Black start services are provided by generators that are able to restart their generation facility with no outside source of power. In the event of a system-wide black-out, black start services are used to re-energize the transmission system and provide start-up power to generators who cannot self-start. Black start providers are required in specific areas of the AIES to ensure the entire system has adequate start-up power.

Transmission constraint rebalancing (TCR) costs are incurred when the transmission system is unable to deliver electricity from a generator to a given electricity-consuming area without contravening reliability requirements. When this occurs, a market participant downstream of a constraint may be dispatched for purposes of TCR under the Independent System Operator (ISO) Rules and would receive a TCR payment for energy provided for that purpose. TCR costs year-to-date are \$4.4 million or 440.0 per cent higher than forecast primarily due to increased congestion on the grid resulting from renewables energization, which has led to an increase in the frequency and magnitude of rebalancing events.

Other Industry Costs (\$ million)			
	2023 Actual	2023 Budget	2022 Actual
AUC fees – Transmission	10.2	10.2	8.9
AUC fees – Energy Market	7.5	7.8	6.8
WECC/NWPP/NERC costs	2.8	2.7	2.4
Regulatory process costs	1.8	4.3	6.6
Total Other Industry Costs	22.2	25.0	24.7

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Other industry costs represent fees or costs paid based on regulatory requirements or membership fees for industry organizations that are not under the direct control of the AESO. These costs relate to the annual administration fee for the Alberta Utilities Commission (AUC), the AESO’s share of Western Electricity Coordinating Council (WECC), Western Power Pool (WPP) and North American Electric Reliability Corporation (NERC) membership fees, regulatory process costs and non-compliance penalties. Regulatory process costs are associated with the AESO’s involvement in AUC proceedings and costs incurred to respond to specific agency-related directions or recommendations that are beyond the routine operations of the AESO; this does not include application preparation costs.

Other industry costs year-to-date are \$2.8 million or 11.2 per cent lower than budget, primarily due to fewer complex regulatory proceedings and litigation matters being heard before the AUC than anticipated.

General and Administrative Costs (\$ million)

	2023 Actual	2023 Budget	2022 Actual
Staff costs	78.1	80.6	75.7
Contract services and consultants	3.3	5.6	2.3
Facilities	4.8	4.6	4.7
Administration	4.4	5.3	3.5
Computer services and maintenance	10.9	10.9	10.4
Telecommunications	1.3	1.4	1.3
Total General and Administrative Costs	102.8	108.3	97.9

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General and administrative costs year-to-date are \$5.5 million or 5.1 per cent lower than budget, primarily due to the timing of planned hires (impacting staff costs), the timing of initiatives requiring consulting and legal services (impacting contract services and consultants), and the timing of travel, training, and meals (impacting administration).

Amortization and Depreciation and Borrowing Costs (\$ million)

	2023 Actual	2023 Budget	2022 Actual
Amortization of right-of-use assets, intangible assets and depreciation of property, plant and equipment	23.0	23.3	24.1
Borrowing costs	0.6	1.0	0.6

Amortization and depreciation costs year-to-date are \$0.3 million or 1.3 per cent lower than budget due to the impact of a rent reduction on the amortization of some right-of-use assets.

Borrowing costs year-to-date are \$0.4 million or 40 per cent lower than budget, primarily due to savings resulting from a reduction in the committed credit facility.

Capital Program (\$ million)

	Total Project Approved	Prior Year(s) Actual	Spent in 2023 to-date	ETC in 2023	ETC Future Yr.(s)	Total Cost Est.	Variance Approved to Total Cost Est.
Strategic-Related Initiatives							
Enabling Transformation	13.4	3.1	4.1	-	3.4	10.7	2.7
Energy Management System (EMS) Sustainment	17.1	9.2	7.1	-	0.9	17.2	(0.1)
Critical Initiatives							
Business System Modernization	0.7	0.3	0.3	-	0.1	0.7	0.0
Cyber Security and Critical Infrastructure Protection (CIP)	1.5	-	1.0	-	-	1.0	0.5
Other Capital Initiatives & Lifecycle Funding	17.7	2.5	10.8	-	3.0	16.2	1.5
Special*	23.5	-	1.3	-	22.2	23.5	-
Total Capital	73.9	15.1	24.7	-	29.5	69.3	4.6

Numbers may not add due to rounding

*AESO Downtown Office Relocation

General Capital Program (\$ million)	
Spent to Date December 31, 2023	24.7
General Capital Approved	25.6
Variance to Budget	0.9