

The purpose of this section of the quarterly report is to provide stakeholders with an update on the Alberta Electric System Operator's (AESO) progress on the initiatives outlined in its [2022 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 progress updates provided.

Reporting on Business Plan Initiatives

Business Initiative	Update Q2 2022	Next Steps
<i>Market Sustainability and Evolution – Business Initiative</i>		
<p>Initial proposal</p> <ul style="list-style-type: none"> In progress Merged Market Sustainability & Evolution I & II and Operating Reserve (OR) Market Competitiveness Enhancement from 2021 Budget Review Process (BRP) <p>Anticipated completion</p> <ul style="list-style-type: none"> 2022 (dependent on findings) Implementation will follow if determined to be required <p>Objective</p> <ul style="list-style-type: none"> To maintain the long-term sustainability and competitiveness of the energy-only market structure and to enable the integration of new technologies with a long-term view of potential market changes needed to facilitate continued resource adequacy and increased flexibility with an ever-increasing variable system <p>Interdependencies</p> <ul style="list-style-type: none"> Technology Integration 	<p>Update</p> <p>Stakeholder comments received on draft proposed amendments to ISO rules and definitions to enable energy storage, including energy storage market requirements and Adjustment to Load on Margin (ALM). Further stakeholder sessions are planned for Sept. 13 and 26. Response to stakeholder comments will be posted prior to sessions</p> <p>Continued assessment on Group 2 design elements for OR Market Review and stakeholder feedback to inform design recommendations and next steps</p> <p>Progressed rule development process on the proposed changes to ISO rule Section 306.7 Mothball Outage Reporting based on the recommendations and stakeholder comments provided in relation to the Mothball Outage Reporting Rule Amendment Design Document. Continued planning for internal processes and system changes implementation</p> <p>On June 9, 2022, posted the <i>AESO 2022 System Flexibility Assessment Report</i> regarding the system's ability to respond to net demand variability and maintain system reliability under certain assumed Outlook scenarios (Reference Case and Clean Tech Scenario) through to 2031</p>	<p>Design, Implementation</p> <p>Continue the rule development process for energy storage rule amendments. Initiate planning for implementation of ALM changes in coordination with energy storage implementation.</p> <p>OR Market Review stakeholder session #3 to be held in late Q3 2022. Rule drafting will follow</p> <p>Publish the first draft of ISO rule Section 306.7 Mothball Outage Reporting for stakeholder feedback in Q3 as the next step in the rule development process and continue planning for implementation</p>

Business Initiative	Update Q2 2022	Next Steps
<i>Settlement Audit – Business Initiative</i>		
<p>Initial proposal</p> <ul style="list-style-type: none"> In progress <p>Anticipated completion</p> <ul style="list-style-type: none"> 2022 Settlement Audits will become part of ongoing base business, performed regularly with the frequency to be determined <p>Objective</p> <ul style="list-style-type: none"> Perform an audit of the AESO's financial settlement processes <p>Interdependencies</p> <ul style="list-style-type: none"> No interdependencies 	<p>Update</p> <p>Audit deferred to 2022 due to COVID-19 and other priorities</p> <p>In the replies to stakeholder comments from the Aug. 26, 2021, BRP Session 1, the AESO provided some additional information and a diagram that is a conceptual overview of the AESO's settlement operations and the related control framework that will be considered in the Settlement Audit</p> <p>Readiness complete and audit underway</p>	<p>Implementation</p> <p>Auditors conduct six-month Settlement Audit testing over Q2 and Q3 (started Apr. 1, 2022)</p> <p>Preparation and completion of Settlement Audit report Q4 2022</p> <p>Upon completion, share a post-audit report with stakeholders upon request, subject to non-disclosure agreement</p>
<i>Red Tape Reduction – Mandated, Top Priority Business Initiative</i>		
<p>Initial proposal</p> <ul style="list-style-type: none"> Mandated in 2020 Anticipated completion March 31, 2023 Red tape will become part of ongoing base business <p>Objective</p> <ul style="list-style-type: none"> To be in compliance with the Government of Alberta's (GoA) Red Tape Reduction (RTR) Initiative, the AESO is committed to reducing regulatory requirements by one-third by March 31, 2023 <p>Interdependencies</p> <ul style="list-style-type: none"> Tariff Modernization Technology Integration 	<p>Update</p> <p>A workplan was prepared in 2020 re: the sequence of documents to be reworked or removed in order to reduce regulatory requirements as per the GoA's schedule</p> <p>Implementation of the workplan has resulted in a reduction of requirements by 25 per cent at Q2 2022</p>	<p>Implementation</p> <p>Continue to advance the workplan with a reduction in requirements via AESO-initiated changes to non-authoritative documents in addition to changes that will need to be filed with the Alberta Utilities Commission (AUC) for approval</p>
<i>Optimizing the Grid – Top Priority Business Initiative</i>		
<p>Initial proposal</p> <ul style="list-style-type: none"> In progress <p>Anticipated completion</p> <ul style="list-style-type: none"> 2023 	<p>Update</p> <p>Congestion analysis is integrated into system planning processes and used to identify the timing of the planned transmission projects and maximize use of existing infrastructure</p>	<p>Design, Implementation</p> <p>Next CETO re-affirmation study in Q4 2022</p> <p>Continue to use congestion analysis for the timing of PENV</p> <p>Developing dynamic line rating</p>

Business Initiative	Update Q2 2022	Next Steps
<ul style="list-style-type: none"> Optimizing the Grid will continue to be part of ongoing base business <p>Objective</p> <ul style="list-style-type: none"> Optimize use of existing grid and minimize need or extend timing out for new infrastructure while ensuring reliability and market access <p>Interdependencies</p> <ul style="list-style-type: none"> Distribution Coordination Technology Integration Market Sustainability & Evolution 	<p>Q1 2022 launched substation level transmission capability maps. Q2 added T-Tap capability</p> <p>Completed 2022 Long-term Transmission Plan, focused on risk-based scenarios and optimizing existing network, published on the AESO website Jan. 31, 2022</p> <p>Cost saving for deferring system projects such as PENV (Provos-to-Edgerton and Nilrem-to-Vermilion Transmission Development) two-year deferral; Central East Transfer-out Transmission Development (CETO) through using re-affirmation studies and Chapel Rock-to-Pincher Creek Transmission Development (CRPC)</p>	<p>(DLR) implementation plan</p> <p>Initiate flow control pilot project implementation for Q3/Q4 2022</p> <p>Seek enhanced flexibility to further optimize the network by engaging in the Department of Energy’s Bulk System Planning engagement</p>

Tariff Modernization – Top Priority Business Initiative

Initial proposal	Update	Design, Implementation
<ul style="list-style-type: none"> In progress <p>Anticipated completion</p> <ul style="list-style-type: none"> 2023 Will be followed by the implementation of Tariff Modernization and any potential related Business Initiatives <p>Objective</p> <ul style="list-style-type: none"> Modernize ISO tariff price signals and simplify the ISO tariff to be more accessible, clear and agile <p>Interdependencies</p> <ul style="list-style-type: none"> Red Tape Reduction Distribution Coordination Technology Integration 	<p>The Bulk and Regional Rate Design and Modernization Demand Opportunity Service (DOS) Rate Design Application is under review by the Commission in Proceeding 26911. Written arguments and written reply arguments are completed.</p> <p>The Adjusted Metering Practice (AMP) Implementation Plan and proposed amendments to Section 502.10 of the ISO rules, Revenue Metering System Technical and Operating Requirements application is under review by the Commission in Proceeding 27047. May 31, 2022, the AUC issued the Decision which denied the approval of the AESO application. On June 30, 2022, the AESO released a Post-Disposition Notice to provide stakeholders clarity regarding next steps</p> <p>Stakeholder comments on the Tariff-Related Initiative Plan received and posted on the AESO website 2022-2023 ISO Tariff-Related Initiatives Plan provides an overview of the tariff-related initiatives that the AESO intends to progress in 2022 to Q2 2023</p>	<p>Continue participation in the AUC proceeding on Bulk and Regional Rate Design and Modernization Demand Opportunity Service (DOS) Rate Design Application</p> <p>Initiate planning for implementation of modernized DOS and other Bulk & Regional items</p> <p>Follow up on the next steps identified for AMP</p> <p>Progress initiatives listed in 2022–2023 ISO Tariff-Related Initiatives Plan, considering feedback provided by stakeholders</p>

Business Initiative	Update Q2 2022	Next Steps
<i>Distribution Coordination – Top Priority Business Initiative</i>		
<p>Initial proposal</p> <ul style="list-style-type: none"> In progress <p>Anticipated completion</p> <ul style="list-style-type: none"> 2024 Distribution Coordination will continue to be part of ongoing base business <p>Objective</p> <ul style="list-style-type: none"> Ensure coordination across the distribution and transmission system as the transformation evolves, focused on optimizing the transmission system while ensuring reliability and market access <p>Interdependencies</p> <ul style="list-style-type: none"> Technology Integration Optimizing the Grid Tariff Modernization General Tariff Application Market Sustainability & Evolution 	<p>Update</p> <p>Launched DER locational static data portal</p> <p>Q1 2021 published DER frequency and voltage ride-through performance requirements technical paper</p> <p>Q1 2022 DER effective grounding technical paper</p> <p>Published and implementing the AESO's Decision-Making Framework for responding to distribution facility owner (DFO) system access service request</p>	<p>Design, Implementation</p> <p>Working with DFOs to adopt frequency and voltage ride-through performance requirements into DFO interconnection documents</p> <p>Working with DFOs to understand engineering practices with respect to effective grounding</p> <p>Plan to publish anti-islanding guideline in Q3 2022</p> <p>Pursue connection process improvements for DFO reliability and capability projects</p> <p>Engage in policy/regulatory related initiatives to share the AESO's principles and perspectives as it relates to mandate implications</p> <p>Remove unnecessary DER market access limitations; AESO proposing to reduce operating reserve minimum asset capability requirements, aligned with ongoing Operating Reserve Market Review engagement</p>
<i>Technology Integration – Top Priority Business Initiative</i>		
<p>Initial proposal</p> <ul style="list-style-type: none"> In progress <p>Anticipated completion</p> <ul style="list-style-type: none"> 2024 Technology Integration will continue to be part of ongoing base business <p>Objectives</p> <ul style="list-style-type: none"> Enable timely planned integration of new technologies onto the grid and into our markets Enable proactive awareness of future new technologies and the potential impacts to reliability, markets and tariffs 	<p>Update</p> <p>Published the AESO's first Technology Forward report focused on the electricity value chain and future implications to the Electricity Value Chain</p> <p>Held the first AESO Technology Summit on Dec. 1, 2021</p> <p>Engaged in the Department of Energy's Energy Storage policy development</p> <p>Posted Energy Storage (ES) proposed rule amendments May 9, 2022</p> <p>Held the Energy Storage Industry Learnings Forum (ESILF) session November 9, 2021</p>	<p>Design, Implementation</p> <p>Implement any ES-related policy changes</p> <p>Publish supply technology research report</p> <p>Continue implementation for Adjustment for Load on the Margin (ALM)</p> <p>Progress distributed energy resource (DER) roadmap, including the remaining technical review areas</p>

Business Initiative	Update Q2 2022	Next Steps
<p>Interdependencies</p> <ul style="list-style-type: none"> • Tariff Modernization • Market Sustainability & Evolution • Optimizing the Grid • Distribution Coordination • Red Tape Reduction 		
<p>Grid Resiliency – Top Priority Business Initiative – New for 2022</p>		
<p>Initial proposal</p> <ul style="list-style-type: none"> • New initiative for 2022 <p>Anticipated</p> <ul style="list-style-type: none"> • 2022/2023 <p>Objectives</p> <ul style="list-style-type: none"> • Enhance system frequency response • Ensure extreme event preparedness across gas/electric interdependencies • Identify additional reliability needs as supply transforms • Assess need for climate adaptation plans • Enhance cyber-security capabilities <p>Interdependencies</p> <ul style="list-style-type: none"> • Market Sustainability & Evolution • Technology Integration 	<p>Update</p> <p>Improving system frequency response following a disturbance; implemented AGC blocking on specific generators; working with specific generators regarding plant level controller coordination; working with specific DERs to revise frequency ride-through settings</p> <p>Identify gas/electric interdependencies. The AESO and NGTL are operationally coordinated and have a risk matrix and protocols in place to deal with events</p>	<p>Design</p> <p>2022 will focus on these initiatives, by priority:</p> <ul style="list-style-type: none"> • Implement system frequency response improvements including rule changes if necessary • Assess future reliability needs to ensure resilience as grid transforms towards decarbonization, followed in 2023+ with any needed market-based approaches on how to deliver those requirements • Assess climate change implications on grid resilience
<p>ARS Development & Monitoring – Business Initiative – New for 2022</p>		
<p>Initial proposal</p> <ul style="list-style-type: none"> • New initiative for 2022 (Initiative added based on stakeholder feedback received during 2022 BRP consultation) <p>Anticipated completion</p> <ul style="list-style-type: none"> • 2023 • Will become part of ongoing base business <p>Objectives</p> <ul style="list-style-type: none"> • Review the development and compliance monitoring and 	<p>Update</p> <p>RoadMap Implementation</p> <p>Stakeholder feedback on existing RoadMap requested at May 11 stakeholder session</p> <p>ARS Enhancement Program Roadmap updated in response to feedback</p> <p>Reliability Standards Discussion Group (RSDG), Alberta Reliability Council (ARC) and Technical Working Groups (TWG) reinstated; hosted ARC session on June 1st and RCDG session on June 8th;</p>	<p>Design, Implementation</p> <p>2022 Workplan and Milestones</p> <p>Initiate development of a risk framework and assessment methodology</p> <p>Work with stakeholders to finalize risk framework</p> <p>Establish process to collaborate with stakeholders and keep them apprised of roadmap progress on a regular basis</p>

Business Initiative	Update Q2 2022	Next Steps
audit processes for ARS requirements Interdependencies <ul style="list-style-type: none"> • Grid Resiliency • Technology Integration 	Improved ARS Program Work Plan posted externally on June 7	Reset and increase stakeholder interactions through the ARC, RSDG, TWG and Compliance Monitoring Program (CMP) Roadmap work likely to extend through 2023

Financial Update – As of June 30, 2022

Transmission Operating Costs (\$ million)

	2022 Actual	2022 Forecast	2021 Actual
Wires costs	906.9	948.4	865.7
Operating reserves	126.5	66.0	191.3
Transmission line losses	104.5	62.0	98.7
Other ancillary service costs	23.6	20.4	28.4
Total Transmission Operating Costs	1,161.4	1,096.8	1,184.2

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 in 2022 are \$906.9 million, which is \$41.2 million or 4.8 per cent higher than the 2021 costs of \$865.7 million due to an increase in regulated rates charged by the TFOs for the current year.

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.

Operating reserve costs in 2022 are \$126.5 million, which is \$64.8 million or 33.9 per cent lower than the 2021 costs of \$191.3 million. The cost of operating reserves is impacted by actual volumes, hourly pool prices and operating reserve prices. The average hourly pool price is \$106 per megawatt hour (MWh) in 2022 compared to \$100 per MWh for the same period in 2021, representing an increase of 6.0 per cent. Operating reserve volumes financially settled in 2022 are 3,392 gigawatt hours (GWh) compared to 3,683 GWh in 2021, representing a 7.9 per cent decrease. The overall decrease in operating reserve costs year over year is the result of decreased volumes, as well as declining operating reserve equilibrium prices. These decreases have more than offset the impact of an increase in the average hourly pool price.

Transmission line losses – Transmission line losses represent the volume of energy that is lost as a result of electrical resistance on the transmission lines. 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 in 2022 is \$104.5 million, which is \$5.8 million or 5.9 per cent higher than the 2021 cost of \$98.7 million due to the impact of a 6.0 per cent higher average pool price in 2022, as well as an increase in volumes. Line loss volumes financially settled in 2022 are 1,027 GWh compared to 940 GWh in 2021, representing a 9.3 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)			
	2022 Actual	2022 Forecast	2021 Actual
Load Shed Service for imports	17.8	14.7	20.8
Transmission must-run - Conscripted	2.2	2.5	3.7
Reliability services	1.4	1.4	1.4
Black Start	1.3	1.2	1.2
Transmission constraint rebalancing	0.4	0.5	1.3
Fast Frequency Response	0.4	-	-
Total Other Ancillary Services	23.5	20.4	28.4

Numbers may not add due to rounding

Load Shed Service for imports (LSSi) 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). LSSi costs are impacted by volume availability, contract prices and AIES requirements for arming and tripping. The 2022 costs for LSSi are \$17.8 million, which is \$3.0 million or 14.4 per cent lower than the 2021 costs of \$20.8 million primarily due to decreased active arming costs.

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 TMR services are 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). The 2022 costs for Conscripted TMR are \$2.2 million, which is \$1.5 million or 40.5 per cent lower than the 2021 costs of \$3.7 million due to decreased unforeseen TMR events.

Reliability services are procured 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 can restart their generation facility with no outside source of power. In the event of a system-wide blackout, black start services are used to re-energize the transmission system and provide start-up power to generators that 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 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 transmission constraint rebalancing under the Independent System Operator (ISO) Rules and would receive a transmission constraint rebalancing payment for energy provided for that purpose.

The 2022 costs for transmission constraint rebalancing are \$0.4 million, which is \$0.9 million or 69.2 per cent lower than the 2021 costs of \$1.3 million due to significant transmission constraint rebalancing events that occurred in January and February 2021.

Other Industry Costs (\$ million)			
	2022 Actual	2022 Budget	2021 Actual
Alberta Utilities Commission (AUC) fee – Transmission	3.8	5.1	4.6
AUC fee – Energy Market	2.9	3.9	3.3
WECC/NWPP/NERC costs	1.2	1.2	1.2
Regulatory process costs	3.7	1.8	0.7
Total Other Industry Costs	11.6	12.1	10.0

Numbers may not add due to rounding

Other industry costs represent fees or costs paid based on regulatory requirements or membership fees for industry organizations, which are not under the direct control of the AESO. These costs relate to the annual administration fee for the AUC, the AESO's share of Western Electricity Coordinating Council (WECC), Northwest Power Pool (NWPP) and North American Electric Reliability Corporation (NERC) membership fees and regulatory process costs and non-compliance penalties. Regulatory process costs are associated with the AESO's involvement in an AUC proceeding to hear objections and complaints to ISO Rules or a regulatory application 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 in 2022 are \$11.6 million, which is \$1.6 million or 16.0 per cent higher than 2021 costs of \$10.0 million. The increase is attributable to increased regulatory process costs primarily related to the Bulk & Regional Tariff proceeding in 2022, which more than offset the decrease in AUC fees for 2022.

General and Administrative Costs (\$ million)			
	2022 Actual	2022 Budget	2021 Actual
Staff costs	37.5	35.3	33.6
Contract services and consultants	1.3	2.3	2.2
Facilities	2.1	2.5	2.1
Administration	1.7	2.6	1.5
Computer services and maintenance	5.1	5.4	5.2
Telecommunications	0.7	0.7	0.7
Total General and Administrative Costs	48.4	48.7	45.2

Numbers may not add due to rounding

In 2022, staff costs are \$37.5 million, which is \$3.9 million or 11.6 per cent higher than the 2021 costs of \$33.6 million. YTD costs are consistent with budget, with the increase year-over-year attributable to the timing of vacation accruals.

In 2022, contract services and consultants are \$1.3 million, which is \$0.9 million or 40.9 per cent lower than the 2021 costs of \$2.2 million. The decrease is due to the timing of activities and initiatives requiring consulting services.

Amortization and Depreciation and Borrowing Costs (\$ million)			
	2022 Actual	2022 Budget	2021 Actual
Amortization of right-of-use assets, intangible assets and depreciation of property, plant and equipment	12.7	13.3	14.9
Borrowing costs	0.5	1.3	45.2

In 2022, amortization of intangible assets and depreciation of right-of-use assets and property, plant and equipment (PP&E) collectively total \$12.7 million, which is \$2.2 million or 14.8 per cent lower than the 2021 amortization of \$14.9 million. The decrease is primarily due to the change to the asset base being amortized and depreciated year-over-year.

Borrowing costs in 2022 are \$0.5 million, which is \$44.7 million or 98.9 per cent lower than the 2021 costs of \$45.2 million. The decrease is primarily due to the 2021 interest expense of \$44.5 million related to the Module C line losses resettlement, for which offsetting interest income was recorded. Excluding this, interest costs of \$0.5 million in 2022 are \$0.2 million or 28.6 per cent lower than the 2021 costs of \$0.7 million due to reduced borrowing rates in 2022.

Capital Expenditure Update – As of June 30, 2022

Capital Program (\$ million)							
	Total Project Approved	Prior Year(s) Actual	Spent in 2022 to-date	ETC in 2022	ETC Future Yr.(s)	Total Cost Est.	Variance Approved to Total Cost Est.
Key Capital Initiatives							
Business System Modernization	1.7	0.6	0.8	0.3	-	1.7	0.1
Cyber Security and Critical Infrastructure Protection (CIP)	1.4	0.0	0.6	1.0	-	1.7	-0.3
EMS Sustainment	13.9	1.2	2.5	5.5	4.5	13.8	0.1
Market Sustainment & Evolution	2.4	-	-	0.2	1.4	1.6	0.8
Optimizing the Grid	1.6	0.2	0.1	-	1.1	1.4	0.2
Technology Integration	0.4	0.0	0.1	0.3	0.1	0.4	-0.1
Other Capital Initiatives	13.7	2.4	3.5	3.9	0.4	10.2	3.6
Life Cycle Funding	6.1	1.5	2.3	2.7	0.0	6.5	-0.4
General / Total Capital	41.3	6.0	10.0	13.9	7.4	37.3	4.0

Numbers may not add due to rounding

General Capital Program (\$ million)	
Spent to June 30, 2022	10.0
General Capital Approved	25.3
Remaining Budget	15.3

Appendix I - Notes

The following tables provide information on the AESO's capital for 2022.

These are the most critical capital projects over the planning period that the AESO believes must be completed within the identified timeframe.

Key Capital Initiatives		
Business System Modernization	Description	Includes providing a single, secure, standardized user experience for external stakeholders exchanging data with various departments across the AESO. This includes sharing data & information, receiving data and information with market participants, government agencies and the public
	2022 Plan	Continued implementation and expansion of an external-facing portal to provide a single platform to exchange data for ARS External Compliance Monitoring (ECM), FOIP requests and distributed energy resource (DER) static data from DFOs. Initiate other opportunities for data exchange with external market participants
Cyber Security and Critical Infrastructure Protection (CIP)	Description	Build on the existing cyber security foundation to protect the AESO from ever-expanding cyber threats. Deliver improvements in the way that cyber security threats and vulnerabilities are identified, providing better visibility of security events, improved responses and coordinated recovery
	2022 Plan	Implementation of various cyber security and CIP-related projects
EMS Sustainment	Description	The EMS is used by System Controllers in grid operations to monitor, control and optimize the performance of the power system. Upgrades relating to the sustainment and optimization requirements of the EMS evergreen strategy include vendor software upgrades and improved analysis and reporting capabilities
	2022 Plan	Continue the capital investment via the Grid Reliability Support program to sustain and enhance the EMS in order to support renewables integration and maintain the reliable operation of the Alberta grid and market Deliver a sustainable long-term EMS required to monitor and control the grid at the lowest possible cost, while generating maximum value from the investment
Market Sustainability and Evolution	Description	Implement system changes required to maintain the long-term sustainability and competitiveness of the energy-only market structure
	2022 Plan	Includes the system changes required to implement the Adjustment for Load on the Margin (ALM)
Technology Integration	Description	Related capital to help ensure coordination across the distribution and transmission system as the transformation evolves, focused on optimizing the transmission system while ensuring reliability and market access
	2022 Plan	Includes projects related to energy storage long-term solution implementation and DER integration
Key Initiatives	2022 Budget	\$11.2 million