

# Energy Storage Update

July 30, 2020

- Provide a progress update, at regular intervals, on energy storage activities:
  - Share progress on the Energy Storage Roadmap integration activities;
  - Provide an update on interrelated initiatives; and
  - Provide an opportunity for stakeholders to submit questions on the update information provided.

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## *OUR ENGAGEMENT PRINCIPLES*

**Inclusive and Accessible**

**Strategic and Coordinated**

**Transparent and Timely**

**Customized and Meaningful**

# Energy Storage Roadmap Update

- Active Connection Projects
- Short-term activities
- Long-term activities
- 2020 Plan
- Energy Storage Industry Learnings Forum (ESILF)

- What is this?
  - These are the projects in the AESO Connection Process with Energy Storage Resources (ESRs)
  - There are 10 projects currently on the connection list
    - TransAlta Summerview 2
    - ENMAX Crossfield
    - ATCO Rycroft
    - FortisAlberta Buffalo Creek
    - FortisAlberta Killarney Lake
    - ATCO Longspur
    - FortisAlberta Metiskow
    - FortisAlberta Burdett
    - TPG Canyon Creek
    - TCE Saddlebrook
  - Three of these projects currently have in-service dates (ISDs) in 2020
    - TransAlta Summerview 2
    - ENMAX Crossfield
    - ATCO Rycroft

- AESO approach:
  - Connections being facilitated under the current legislative framework and AESO authoritative documents (ADs)
  - Documents and comment matrix posted in April 2020 for stakeholder feedback on:
    - Overview of short-term market implementation requirements for energy storage (ES) participation
    - Overview of ESRs – Operating Reserves (OR) qualifications and technical requirements and Alberta Reliability Standards (ARS) applicability
    - 2020 Plan for energy storage roadmap integration activities
  - Information documents (IDs) to provide clarity for connection were published on June 19, 2020 based on the above documents and stakeholder feedback
  - AESO published a response letter, in addition to the IDs, to the feedback provided by the stakeholders on June 19, 2020

- Deployment of changes to market systems and Energy Management System (EMS) to allow for ES connection to the Alberta Interconnected Electric System (AIES) completed on June 8, 2020
- Market IDs for short-term ES implementation created and published
- System Access Service Request (SASR) form updated to include ES
- Short-term implementation learnings will be taken into consideration for the long-term recommendations



- The AESO's long-term integration of ES will cover the development of recommended changes to AESO authoritative documents that capture the unique attributes of ES
- Technical studies and learnings from the short-term activities will feed into the long-term activities
- Tariff – all ES tariff-related activities will continue to be part of the Bulk and Regional Tariff Design

- AESO cross-functional groups continue to advance work on:
  - Forecasting, planning and market reports
  - Configurations, market qualification and connection requirements
  - Market participation
  - Operations
  - Storage as a transmission alternative

- Forecasting, planning and market reports
  - Integrate ES into the forecasting, planning and market reporting processes at the AESO
  - Continue incorporating ES in the Long-term Outlook (LTO) and Long-term Transmission Plan (LTP)
  - Incorporated ES into the long-term adequacy report published in May 2020
  - Ongoing activities (priorities for Q3 2020)
    - Assess the need for additional changes and reporting on ES for public market reports
    - Review facility modelling data for ES

- Configuration, market qualification and connection requirements
  - Understand current and potential future configurations
  - Determine technical considerations including modeling and studies, metering, qualification requirements to participate in markets and provide services, applicability of technical requirements
  - Enable the connection process for ES projects
  - Ongoing activities
    - Monitoring active connection projects for learnings applicable to long-term recommendations
    - Evaluating stakeholder feedback on OR qualification, technical requirements and ARS applicability documents for consideration towards long-term recommendations
    - Determining the value proposition of ESR in energy market and ancillary services

- Market participation
  - Market IDs for short-term ES implementation published
  - Learnings, as they occur from short-term implementation, will be taken into consideration as part of the long-term activities and implementation
  - Ongoing activities
    - The evaluation of the long-term energy market participation includes:
      - *Hybrid participation*
      - *Half-range energy offers versus full-range participation*
      - *Definitions as required*
      - *Commissioning requirements for storage*
    - It is expected that ADs would be updated as a result of the long-term integration activities

- Operations
  - Understand how ES assets can operate in the various markets to develop a framework to reflect various potential configurations in support of a reliable AIES
  - Ongoing activities
    - Technical assessments on ES configurations and system applications
    - Technical studies to understand ES performance capabilities and potential grid reliability impacts from ES participation in the long-term
      - Operating Reserve minimum size and minimum duration requirements
      - Requirements for services (e.g., fast frequency response – LSSi)
      - Wind and solar forecasting for hybrid sites
      - Modeling, dispatch-ability, and controllability of ESRs
      - SCADA requirements

- Storage as a transmission alternative (SATA)
  - Investigate potential opportunities to utilize non-wires solutions, including energy storage
  - The objective is to adopt a flexible approach to planning the transmission system that maximizes its ability to propose non-wires solutions when appropriate
  - The AESO supports the application of competitive forces where possible and therefore has a strong preference for competitive procurement and ownership of ES to provide non-wires alternatives
  - Ongoing activities
    - Review of policy, technical and economic assessments, market impacts, procurement, transmission planning process and associated requirements for regulatory processes related to SATA

- The AESO expects to initiate stakeholder engagement on the long-term market participation activities of ESRs in the Fall
- The market participation work stream scope includes:
  - Participation in energy and ancillary services (AS) markets
  - Offers and bids
  - Dispatch and dispatch compliance
  - Settlement and Credit
  - Supply surplus and Short-term adequacy
- Seeking stakeholders input for **long-term market participation** in the energy and AS markets



- In the Energy Storage Roadmap there is a plan out to the end of 2022
- Incorporating stakeholder feedback, a 12-month rolling horizon with quarterly updates will begin in the Q3 update
- Phase 1 and Active Connection Projects work completed
- ISO Tariff Design following Bulk & Regional Tariff Design timeline – currently on hold
- Engagement opportunities and timing will also be updated to allow stakeholders visibility and time to plan for participation, where appropriate:
  - ES update sessions plan to be quarterly with stakeholders
  - ESILF workshops for the membership of that forum
  - Long-term work areas may have ad-hoc opportunities for topic specific engagement (see slide 16 as an example)

# 2020 Plan – Schedule timeline

Classification	ES Roadmap Integration Activities	2020 Q1			2020 Q2			2020 Q3			2020 Q4		
		J	F	M	A	M	J	J	A	S	O	N	D
Education and Awareness	<b>ES Progress Updates – UPDATED</b> Share progress on the Energy Storage (ES) Roadmap integration activities, interrelated initiatives as well as provide a forum to address stakeholder questions.			E				E		E			E
	<b>ES Industry Learnings Forum (ESILF) – UPDATED</b> Organize forum to provide expertise and key learnings to the AESO on targeted matters related to the integration of energy storage in Alberta.					E				E		E	
Active Connection Projects	<b>Participation under Existing Market Rules – COMPLETE</b> Develop and/or modify Information Documents (IDs) to provide clarity under existing market rules as required.		C		E		I						
	<b>Interim AESO System Modifications – COMPLETE</b> Define and implement requirements for AESO system modifications that need to be made to support in-service dates for active connection projects under the existing framework.				I								
Phase 1 Short-term Implementation	<b>System Access Service Request (SASR) Form Modification – COMPLETE</b> Investigate requirements to modify the SASR Form to improve the collection of connection information required for ES assets.			C			I						
	<b>ISO Tariff Design – ON HOLD</b> Work in concert with ISO tariff design to ensure ES is considered.	Progress will align with Bulk and Regional Tariff Design											
Phase 2 Long-term Implementation	<b>Forecasting, Planning and Market Reports</b> Develop and implement forecasting and planning models to support Long-term Outlook (LTO) and Long-term Transmission Plan (LTP).								A				
	<b>Configuration, Qualification and Connection Requirements</b> Develop appropriate functional specification documents; identify market participation options, permissible configurations and metering requirements for ES.					A						C	
	<b>Market Participation</b> Evaluate long-term options for energy storage participation in the Energy and Ancillary Service markets.									A			C
	<b>Operations</b> Perform technical studies for the review of the operating parameters and requirements for the different types and configurations of ES; identify the impact to the connection processes and system applications to enable full range of ES operation.										A		C
	<b>Storage as a Transmission Alternative (SATA)</b> Develop evaluation criteria and quantification of benefits of SATA as a non-wire solution; identify technical parameters and configurations, asset ownership and market participation options for SATA.											A	

ES integration process phases: Analysis (A), Conception (C), Development (D), Regulatory (R), Implementation (I), Engagement (E)

- ESILF kick-off session held on May 20, 2020 with attendance of all the members, Alberta Energy, Market Surveillance Administrator (MSA) and the Alberta Utilities Commission (AUC)
- Summary of the kick-off session posted on July 2, 2020; comment matrix provided for stakeholder feedback due by July 31, 2020
- Workshop topics include:
  - Market opportunities in the energy and ancillary services markets, or other potential revenue streams
  - Connection options; ES configuration options
  - Storage as a transmission alternative (or a distribution alternative)
  - Sharing learnings from other jurisdictions on legislation, regulation and policy

- Workshop topics include (continued):
  - Market qualification parameters, process, models and data (SCADA) requirements
  - Sharing of experiences in commissioning and testing of new technologies or configurations
  - Economic modelling
  - Process efficiencies within existing framework
- Learnings from future workshops will be posted on the ES website for visibility for all stakeholders

- If you have questions related to this update, please send your questions by email to [EnergyStorage@aeso.ca](mailto:EnergyStorage@aeso.ca) with the subject **ES Q2 Update by August 21, 2020**
  - A summary question and answer document will be provided to address stakeholder questions that are submitted
- ESILF sessions to resume in September 2020
- Next update session planned for the end of Q3 2020

# Interrelated Initiatives Update

- Distributed energy resources (DER) Roadmap
- ISO Tariff Design

- DER Roadmap published June 9, 2020
  - Stakeholder feedback received, summary to be posted before next update session
- 2020 / 2021 Plan for DER Integration Activities published by end of July 2020
  - The above plan will provide a greater level of detail on activity progress and reflect potential stakeholder engagement opportunities
  - There will be an opportunity to provide feedback on the plan, open for a few weeks after it is posted
  - This plan will become the basis for future quarterly DER update sessions



- An update on timing for the Bulk and Regional Tariff Design and engagement will be provided to the AUC on July 27, 2020
  - Tariff treatment for energy storage remains in scope of this engagement
- Tariff rate design objectives and rate options, including those for energy storage, were presented to stakeholders at a session on March 13, 2020
  - <https://www.aeso.ca/assets/Uploads/Bulk-and-Regional-Tariff-Design-March-13-2020-Updated2.pdf>



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**Thank you**