

Purpose and background

The AESO's Energy Storage Industry Learnings Forum (ESILF) was created to provide a setting for energy storage industry leaders to share expertise and key learnings from energy storage integration in other jurisdictions and provide their perspectives on energy storage topics to assist the AESO in facilitating the integration of energy storage in Alberta.

The ESILF is an information gathering forum for the AESO, not a decision body.

For additional information on the forum, please review the ESILF Terms of Reference located on the AESO website at www.aeso.ca and follow the path Stakeholder Engagement > AESO initiatives > Energy Storage.

ESILF membership

The following are the members of the ESILF; membership broadly represents a cross-section of industry leaders with energy storage experience. To keep topic discussions meaningful and effective, membership was targeted without compromising stakeholder representation and required expertise. Alberta Energy will be a member of the forum to share in the key learnings and discussion for the purposes of potential policy or legislative changes to facilitate energy storage integration in Alberta. In addition, the Alberta Utilities Commission and the Market Surveillance Administrator will also be members of the forum to share in the key learnings and discussion.

Company	ESILF Member
ABB (ASEA Brown Boveri)	Dan Gustafson
Alberta Energy	Michael Fabiyi
Alberta Innovates	Maureen Kolla
Alberta Utilities Commission	Olexandr Vasetsky
AltaGas Ltd.	Cherise Nielsen
AltaLink Management Ltd.	Hao Liu
ATCO Electric Ltd.	Jenny Wang
Canadian Wind Energy Association (CanWEA)	Evan Wilson
Chapman Ventures	Dan Chapman
Enel North America	Ryan Prescott
Energy Storage Canada	Justin Rangooni
ENMAX Corporation	Dallas West
FortisAlberta Inc.	Neil Cumming

Company	ESILF Member
Market Surveillance Administrator	Derek Olmstead
Nutana Power Ltd.	Graeme Harrison
Power Advisory LLC	Travis Lusney
RMP Energy Storage Inc.	Robert Stewart
Solas Energy Consulting Ltd.	Paula McGarrigle
Suncor Energy Inc.	Daniel Visser
TC Energy Corporation	Michael Edwards
Teric Power Ltd.	Craig Barnes
TransAlta Corporation	Akira Yamamoto
Turning Point Generation & WindRiver Power Corporation	Kipp Horton

The AESO will have the following members on the ESILF:

AESO members	
Vice President, Grid Reliability	Dennis Frehlich
Director, Grid Planning & Operations Engineering	Ata Rehman
Director, Markets & Tariff	Nicole LeBlanc
Manager, Market Implementation, Markets & Tariff	Ruppa Louissaint
Manager, Operations Engineering and Market Support, Grid Planning & Operations Engineering	Biju Gopi

AESO Energy Storage Roadmap

The Energy Storage (ES) Roadmap sets out the AESO's plan to facilitate the integration of energy storage technologies into AESO Authoritative Documents and the AESO grid & market systems. This will improve the clarity required for market qualification and participation, and enable efficient, effective connection, monitoring and control of energy storage facilities when connected.

The ES Roadmap content has been built off a strong foundation of pre-existing work led by the AESO, with insights from a range of stakeholders including storage proponents, and owners of generating facilities, transmission facilities and electric distribution systems.

The successful implementation of the ES Roadmap is led at the Vice President level within the AESO, ensuring cross-functional enablement and coordination.

Please see the Energy Storage web page on the AESO website at www.aeso.ca and follow the path Stakeholder Engagement > AESO initiatives > Energy Storage for additional information and related materials including:

- Participation under existing market rules:
 - Overview of Short-term Market Implementation Requirements for Energy Storage Participation and stakeholder feedback received
 - Overview of Overview of ESR – OR Qualification & Technical Requirements and ARS Applicability and stakeholder feedback received
- 2020 Plan for ES Roadmap Integration Activities and stakeholder feedback received
- Energy Storage Progress Update Presentation, Webinar Recording and Q&A
- Energy Storage Roadmap

Energy Storage Principles

The AESO provides for the safe, reliable and economic operation of the Alberta Interconnected Electric System (AIES) while facilitating a fair, efficient and openly competitive market (FEOC) for electricity. In addition to these principles applied in delivery of the AESO’s mandate, a set of ES principles have been developed to guide the AESO’s development of the ES Roadmap. The ES principles include:

- The AESO will facilitate integration of energy storage
- Energy storage will be approached as a unique asset type; it is neither a load nor a generator
- The AESO will be impartial to energy storage technology, configuration and point of connection

AESO Initiatives

The AESO continues to work cross-functionally across the organization to ensure all AESO initiatives which are connected or interrelated remain coordinated as appropriate. Figure 1 below illustrates how the AESO’s different initiatives intersect across the core principles and areas and operate in close coordination with one another.

Figure 1: Scope of AESO initiatives

PRINCIPLES		AESO MANDATE	AESO INITIATIVES		
			1. DER Roadmap	2. Energy Storage Roadmap	3. Pricing Signals and Cost Allocation
PUBLIC INTEREST	Safe, reliable, economic operation of the AIES	Grid Reliability	4. T+D COORDINATED PLANNING FRAMEWORK		
	FEOC Markets	Markets	5. 2020 MARKET - RELATED INITIATIVES		
	Just and reasonable rates	Tariff	6. ISO TARIFF CONSULTATIONS		

Tariff matters will not be discussed as part of ESILF workshop topics; those interested in tariff-related matters should follow or be involved in the AESO’s Bulk and Regional Tariff Design initiative. Please note, the AESO has postponed for 90 days all portions of the Bulk and Regional Tariff Design stakeholder engagement work until July 15, 2020. The AESO plans to re-evaluate at that time to determine next steps and whether a continued delay is prudent. For additional details, please see the notice on the AESO website at www.aeso.ca and follow the path Stakeholder Engagement > Rules, standards and tariff consultations > Tariff (filter) > Bulk and regional tariff design.

Suggestions for Future ESILF Workshop Topics

The topics for discussion in the kick-off session are for the purpose of identification and prioritization of future workshop content; it is not the intent to exhaust the topics or engage in detailed discussion.

The scope of the ESILF is to provide expertise and key learnings to the AESO on targeted matters related to the integration of energy storage in Alberta. The AESO is interested in hearing learnings and perspectives and this forum will allow opportunities to explore and probe through discussion what implications those had for other jurisdictions.

Future Workshop 1 Suggested Topics

1. Economic modelling – Capex costs, operational costs, connection costs, operational business models (revenue streams needed for break-even or profit)
2. Energy storage configuration options – pros and cons of various technical configurations, hybrid, technology selection and sizing
3. Connection options – pros and cons of Transmission versus Distribution

Future Workshop 2 Suggested Topics

1. Market qualification parameters, process, models and data (SCADA) requirements
2. Sharing of experiences in commissioning and testing of new technologies or configurations – planning, recommendations, compliance (technical and contractual)
3. Storage as a transmission alternative (or a distribution alternative), opportunities for Market Participants to participate in this area and how they could do that
4. Process efficiencies; understand what opportunities for efficiencies are within our existing framework
5. Markets – opportunities for energy storage in the energy and ancillary services markets; other potential revenue streams identified by Market Participants that could bring value to the AIES

Future Workshop 3 Suggested Topics

1. Legislation, regulations, policy sharing and learnings from other jurisdictions

ESILF Timeline

Figure 2 below illustrates the proposed timeline for the ESILF workshops and can be found in the *2020 Plan for Energy Storage Roadmap Integration Activities*. Details and exact dates will be provided to members in advance of each workshop.

Figure 2: ES Industry Learnings Forum (ESILF) schedule

2020 Q1			2020 Q2			2020 Q3			2020 Q4		
J	F	M	A	M	J	J	A	S	O	N	D
				E		E		E		E	