# 2020-2021 Plan for DER Roadmap Integration Activities

## Introduction

In support of the *AESO Distributed Energy Resources (DER) Roadmap* published on June 9, 2020, this plan provides a detailed view of the DER Roadmap integration activities that the AESO intends to progress in the next 12 months, which will be an ongoing initiative incorporated into the upcoming AESO 2021 Budget Review Process (BRP).

The AESO plans to engage stakeholders during the conception and development phases in alignment with the AESO Stakeholder Engagement Framework[1]. In addition, information on progress and engagement opportunities will be communicated to stakeholders at regular DER progress update sessions. The plan below outlines timing for the DER Roadmap integration activities and their anticipated stakeholder engagement while recognizing timelines may change as activities progress and more information becomes available. This plan should assist stakeholders with identifying activities they may be interested in, such as DER Roadmap progress updates and potential timing of future stakeholder engagement opportunities over the next 12 months, for their planning purposes should they be interested in participating.

The AESO continues to work cross-functionally across the organization to ensure all initiatives which are connected or interrelated will remain coordinated as appropriate.

[1] https://www.aeso.ca/assets/downloads/Stakeholder-Engagement-Framework-Report-FINAL.pdf





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## DER Integration Process

The following provides a description of the DER integration process:

### *Analysis (A)*

In the analysis phase, the AESO identifies issues resulting from internal analysis, stakeholder feedback, government policy or market design review. This phase is an internal phase for the AESO and there may be initiatives that have not yet progressed to the point of requiring stakeholder input. Such initiatives may not appear on the plan and may be added once initial analysis has been completed or an engagement decision has been reached. While in this phase, the AESO may research and define the issue, analyze the implemented solution in other jurisdictions, perform analytics, and seek out expert opinions to determine whether to move forward to the next phase.

### *Conception (C)*

During the conception phase, the AESO will formalize the issue and conduct an options analysis. Input for the options analysis may be gathered through stakeholder engagement, and/or third-party studies. The AESO may develop recommendations and determine necessary stakeholder engagement.

### *Development (D)*

During the development phase, the AESO works with stakeholders to create proposed Independent System Operator (ISO) rules or changes to ISO rules. The proposed drafts are released to stakeholders for comment and those comments are considered in the development of a proposed ISO rule or Authoritative Documents (AD).

### *Regulatory (R)*

The regulatory phase begins with the filing of an application for approval of a proposed ISO rule with the Alberta Utilities Commission (AUC), and typically concludes with the issuance of a decision on the application. It may also extend beyond an AUC decision if compliance filings or review and variance applications need to be addressed.

### *Implementation (I)*

The implementation phase includes changes to information technology, business processes, and training and ISO rules. The longest implementation timeline would be for the new ISO rules.

### *Engagement (E)*

The engagement phase may include a range of stakeholder engagement approaches - with the purpose to inform or to collaborate - depending on the topic and issue being considered and the outcomes being sought.

*The approach taken and the extent of activity for each phase will be uniquely dependent on each DER integration activity. For example, not all activities will result in new proposed ISO rules or changes to an ISO rule, therefore these activities will not go through Development and Regulatory phases prior to entering the Implementation phase. The plan below shows the planned activity for the next 12 months; therefore, the completed phases and planned phases outside of this 12 month period are not shown.*

| Classification | DER Roadmap Integration Activities | 2020 Q3 | | | 2020 Q4 | | | 2021 Q1 | | | 2021 Q2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | J | A | S | O | N | D | J | F | M | A | M | J |
| **Stakeholder Engagement** | **DER Progress Updates**<br>Share progress on activities, other interrelated initiatives and address stakeholder questions. | E | | E | | E | | | E | | | E | |
| **Reliability** | **Data**<br>Develop a platform to receive standardized DER static data and assess minimum SCADA data trigger level | C | C | C | C | C | C | D/I | D/I | D/I | D/I | D/I | D/I |
| | **Forecasting**<br>Enhance AESO forecasting processes and incorporate DFO DER forecast information where appropriate | C | C | C | C | C | C | I | I | I | I | I | I |
| | **Modelling**<br>Capture DERs adequately in AESO's power system models | C | C | C | C | C | C | I | I | I | I | I | I |
| | **Connection Process**<br>Review and update the AESO BTF Process | C | C | C | C | I | | | | | | | |
| | **Coordinated Planning**<br>Enhance Transmission planning process in coordination with Tx/Dx Coordinated Planning Framework. | C | C | C | C | C | C | I | I | I | I | I | I |
| | **Coordinated Operation**<br>Improve real time operation tools and information. | C | C | C | C | C | C | C | C | C | C | C | C |
| | **Technical Interconnection Requirement**<br>Evaluate and assess appropriate technical interconnection requirements | C | C | C | C | C | C | D | D | D | D | D | D |
| **Market Efficiency** | **Market Participation and Aggregation**<br>Evaluate and assess options that encourage DER market participation | **Progress will be aligned with AESO Market Related Initiative Timeline** | | | | | | | | | | | |
| **Tariff** | **Tariff**<br>Evolve tariff framework that drives effective long-term price signals that encourage efficient use of the Tx and Dx system | **Progress will align with 2018 GTA Implementation and Bulk and Regional Tariff Design** | | | | | | | | | | | |

DER Roadmap Implementation Phases: Analysis (A), Conception (C), Development (D), Regulatory (R), Implementation (I), Engagement

## DER Roadmap Integration Activities

### 1. Stakeholder Engagement

#### a. DER Progress Update

At regular intervals, the AESO will share progress on the DER Roadmap integration activities, provide an update on inter-related initiatives as well as address stakeholder questions.

### 2. Reliability

The AESO has established a DER Technical Performance Exploration Group (TPEG) to collaboratively work with DFOs and TFOs in understanding the potential impacts of DER and the future needs to effectively integrate DER into the Alberta Interconnected Electric System (AIES) in consideration of transmission and distribution network reliability. Topics of discussion are focused on Technical Interconnection requirements and Coordinated Operation and Modelling activities. If required, an industry forum may be established to engage stakeholders to further discuss and understand these topics.

#### a. Data

Increasing DER penetration also increases more variability and uncertainty in net-load profiles; hence, increased DER visibility to the AESO will be key to ensuring continued reliable operation and planning of the AIES. The AESO will be working with the DFO to standardize DER static data submission and then will centrally store it in an internal database. Following the Conception phase, the activity will procced to the Implementation phase.

In addition, the AESO is also exploring whether enhanced real-time visibility of DER smaller than five megawatts (MW) will be needed. Following the Conception phase, this activity is expected to proceed to the Development phase and potential Regulatory phase if DER smaller than five MW needs to be enabled and requires ISO rule or AD changes.

#### b. Forecasting

The AESO's forecasting processes, from long term to real time, will need to be enhanced to incorporate DER forecast information. In the Conception phase, the AESO will engage with DFOs to obtain an understanding of DFO DER forecasting information and plans to work with the DFOs to develop a process to gather DFO forecasting information in order to enhance AESO forecasts. At this time the AESO does not anticipate changes to ISO rules or ADs.

### c. Modelling:

DER models need to be adequately captured in AESO's power system models which feed into numerous planning and operating processes that support reliability of the AIES. For Central Power System (CPS) models, the AESO has engaged the Transmission Data Committee in Q4 2019 on the DER model requirements. The committee's feedback have been incorporated into AESO information documents that provide the rational and modelling requirements for market participants. For real time DER models, the AESO is engaging TFOs/DFOs using the DER TPEG to obtain TFO/DFO DER modelling knowledge and information, and then incorporate the information into AESO's DER models.

### d. Connection Process:

DER requesting to connect to the AIES will typically progress through AESO's Behind The Fence (BTF) process. With increasing DER penetration and implementation of ISO Tariff, the BTF Process and the Connection Process are being enhanced with inputs from stakeholders. Initial stakeholder engagement on the BTF Process[2] was conducted in November 2019, and feedback has been incorporated. A follow up session is currently being planned for the third quarter of 2020.

### e. Coordinated Planning

With increasing DER penetration, AESO's transmission planning will be enhanced with inputs from improved data, forecasting and modelling processes coupled with the Tx/Dx Coordinated Planning framework initiative. Engagement with DFOs, TFOs and industry participants will follow Tx/Dx Coordinated Planning framework initiative timeline.

### f. Coordinated Operation

The AESO grid operation requires improved real time information such as accurate net demand variability (NDV) forecasting, as well as improved real time processes and tools to ensure continued reliable operation of the AIES as DER continues to grow. AESO will continue to assess the real time operation information, process and tools needs in consideration of available DER data, forecasting and modelling information.

### g. Technical Interconnection

As more DER are connecting and supplying energy, they may also impact the reliability of the AIES. The AESO is exploring appropriate technical interconnection requirements with inputs from DFOs and TFOs via the DER TPEG and where appropriate will engage the industry via industry forum on the following

- Voltage and frequency ride-through requirements
- Under Frequency Load Shedding coordination
- Transmission Protection and Control coordination

[2] https://www.aeso.ca/event/2019-11-26-aeso-behind-the-fence-stakeholder-session

- Islanding/Anti-islanding, and Restoration coordination
- Commissioning and Testing requirements
- Cybersecurity requirements

### 3. Market

This activity is designed to facilitate DER integration and access to the energy and ancillary services markets by removing unnecessary barriers and ensuring a fair, efficient, and openly competitive (FEOC) market. The AESO intends to review and update any ISO rule changes (if recommended) to foster investor understanding of market expectations and aid them when making future decisions.

Please refer to the 2020-2021 Market Related Initiative Plan for more details.

### 4. Tariff

With increasing DER, the current ISO Tariff may require future changes. The AESO is currently evaluating how the ISO tariff should evolve in response to the following:

- Rate DTS (Demand Transmission Service) and Rate STS (Supply Transmission Service) are currently determined at the transformer level rather than at the feeder level. This results in a difference in contract capacity and metering levels at DFO contracted load substations that serve Distributed Connected Generation (DCG).
- Potential reduction of rate DTS load billing due to DER connection, eroding price signal for System Access Service Request (SASR)
- Potential lack of fair treatment between transmission-connected generation versus distribution-connected generation
- Calculation and use of the AESO's substation fraction formula when DER are added to an existing DFO-contracted load substation

Please refer to 2018 GTA Implementation and Bulk Regional Tariff Design for more details.