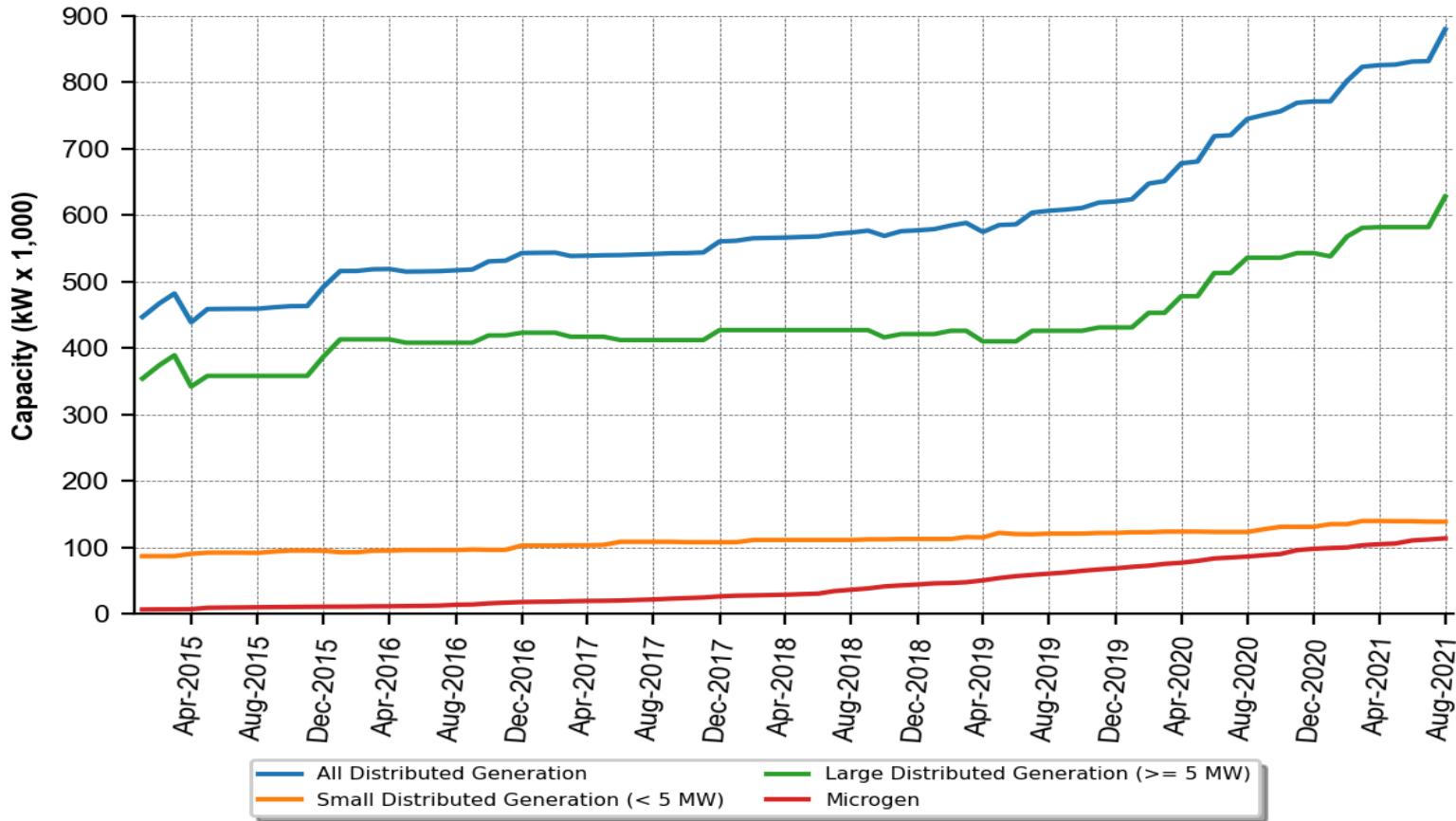


**Distributed Energy Resources  
Progress Update**  
September 28, 2021

- Quarterly progress update on AESO DER Roadmap Integration Activities
  - DER Current State Overview
  - Update on DER Roadmap integration activities since June 2021 update
    - DER Activities completed in Q3 2021
    - DER Activities progress in Q3 2021
  - Planned activities for Q4 2021
- Update on the AESO TxDx Coordinated Planning initiative
  - Progress of the TxDx coordinated planning initiative

# DER Current State – end of August 2021

## Capacity of Distributed Generation in Alberta



- Total DER installed capacity at the end of August 2021 is 880 MW
- DER penetration has a 12 month increase of 136 MW and 18% growth
  - August 2020 = 744 MW vs August 2021 = 880 MW

- DER Forecasting
  - Provided DER long-term forecast by gas, wind, solar, and EV technologies in the [2021 Long-term Outlook](#)
  - Improved the AESO's operational near term/real time DER forecast by incorporating meteorological data into AESO forecast in July 2021
- DER Modelling
  - Provided a simplified process to the Market Participants for selecting DER models larger than 5 MW in the amended AESO [ID #2010-001R](#), Facility Modelling Data and List of Electrical and Physical Parameters for Transmission System Model.
  - Posted amended [ID #2010-001R](#) on AESO's website on July 26, 2021

- Technical Interconnection Requirement
  - Voltage and frequency ride-through implementation
    - Continue working with and supporting DFOs to implement voltage and frequency ride-through parameters in each of DFO's technical interconnection requirements
  - Islanding and anti-Islanding coordination
    - Continued targeted engagement with DFOs and TFOs
    - Targeting publication of anti-Islanding guideline in Q4 2021
  - Transmission protection and control coordination – effective grounding
    - Continued targeted engagement with DFOs and TFOs
    - Targeting publication of Effective Grounding Guideline Paper in Q4 2022

- Coordinated Operation – determine DER Trigger on Significant Outage Coordination
  - Due to the increase in DER, transmission outage coordination has been experiencing challenges where TFO facility outages are being classified as “significant” outages requiring longer lead time notices
  - To address these challenges, the AESO clarified the interpretation of “connects” in subsection 3(3)(d) of ISO Rule 306.4
  - The AESO has amended the Information Document, Outages [ID #2013-003R](#), to clarify the interpretation of “connects” in subsection 3(3)d
  - Posted amended [ID #2013-003R](#) on the AESO’s website on July 22, 2021

- Energy Market Participation
  - Maintain current offer requirement size threshold of 5 MW or greater
  - Propose voluntary participation in the energy market for source assets of 1 MW or greater and less than 5 MW
  - Timing of consultation is anticipated to be in co-ordination with [Energy Storage Rule Amendments](#)
- Operating Reserve Market Participation
  - Propose to reduce the minimum asset capability requirement
  - Regulating 15 MW → 1 MW
  - Spinning 10 MW → 1 MW
  - Supplemental 5 MW → 1 MW
  - Consultation is planned to occur through the [Operation Reserve \(OR\) Market Review Initiative](#)

# Looking Ahead

Classification	DER Roadmap Integration Activities	Priority Rank	2021 Q3			2021 Q4			2022 Q1			2022 Q2		
			J	A	S	O	N	D	J	F	M	A	M	J
Stakeholder Engagement	<b>DER Progress Updates</b> Share progress on activities, other interrelated initiatives and address stakeholder questions.				E			E			E			E
	<b>Data</b>													
Reliability	Assess and implement minimum SCADA data trigger level	H	I											
	<b>Forecasting</b>													
	Forecast DER gross generation and gross load separately (AESO internal activity)	L							C			I		
	Geographical forecast of DER sizes at the POD level (AESO internal activity)	L	Scheduled for 2023											
	Near term/real time forecast to incorporate meteorological data into DER and variable generation (AESO internal activity)	M	Complete											
	<b>Modelling</b>													
	Energy storage model	H	Progress will be aligned with <a href="#">AESO Energy Storage</a> – see Phase 2 Long-term Implementation activities											
	DER model directly connected at 25 kV bus	H	Complete											
	Assess feeder impedance to be included into DER models	H	Complete											
	<b>Coordinated Planning</b>													
	Enhance Transmission planning process in coordination with Transmission/Distribution (Tx/Dx) coordinated planning framework	H	Progress will be aligned with Tx/Dx Initiative											



	<b>Coordinated Operation</b>																		
	Incorporate DER into net demand forecasting process (AESO internal activity)	H	I																
	Enhance real-time operator's supply/demand requirements and displays (AESO internal activity)	M									C	I							
	Determine DER Trigger on Significant Outage Coordination	H	Complete																
	<b>Technical Interconnection Requirement</b>																		
	Voltage and frequency ride-through requirement	H	I																
	Transmission protection and control coordination – Effective Grounding	M	C						I										
	Islanding and anti-islanding coordination	M	C						I										
	Restoration coordination	L								C									
	Commissioning and testing requirements	L	C									I							
	Cybersecurity requirements	L	C						I										
<b>Market Efficiency</b>	<b>Market Participation and Aggregation</b> Evaluate and assess options that encourage DER market participation	M	Progress will be aligned with <a href="#">DER Market Participation</a>																
<b>Tariff</b>	<b>Tariff</b> Evolve tariff framework that drives effective long-term price signals that encourage efficient use of the Tx and Dx system	M	Progress will be aligned with <a href="#">Bulk and Regional Tariff Design</a>																

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

DER Roadmap Priority Rank: H= High Priority, M= Medium Priority, L= Low Priority. The completed phases and planned phases outside of this 12 month period are not shown.

- AESO Connection Process for DFO projects
  - Completed workshops with DFOs, TFOs and industry ratepayer groups to identify challenges and explore options for improvements
  - The AESO is reviewing feedback with the goal of implementing changes starting in Q1 2022
- Coordination of AESO transmission capability assessments with DFO DER Hosting maps
  - Completed workshop with DFOs and TFOs to understand assessment methodologies and coordination opportunities
  - The AESO is reviewing feedback and plans to publish AESO transmission capability assessments in Q1/Q2 2022

We value stakeholder feedback, and we invite all interested stakeholders to provide their input on this presentation to the stakeholder email address: [stakeholderrelations@aeso.ca](mailto:stakeholderrelations@aeso.ca)



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