Item 6.3: Grid Transformation update

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Technology and Security Committee Meeting

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- **Purpose**
  Provide an update on the Grid Research, Innovation and Transformation (GRIT) initiatives.

- **For Information Only**
  No action is requested of the ERCOT Board; for awareness only.

Key Takeaways

- Progress on Grid Research, Innovation and Transformation initiatives is mixed, with most trending to plan, but a few requiring extensions

- Transitional planning is actively underway to operationalize completed initiatives

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GRIT Technology Initiatives – 2025 Roadmaps

Technology Initiative	2025				2026				2027				2028			
(Strategic Objective Alignment)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. Look Ahead Commitment of ESRs ☀	Proof of Concept				White Paper & NPRR			Implementation								
(Reliability/Efficiency)																
2. Receive operational info from DERs ☀	Proof of Concept				Charter		Implementation (phases)									
(Reliability/Efficiency)																
3. Meter data disaggregation for DR ☀	POC ◆	RFP			Charter		Implementation									
(Reliability/Efficiency)																
4. Measure and estimate the regional inertia and system strength ☀	Proof of Concept		Expand			Charter		Implementation								
(Reliability)																
5. Reactive Power Coordination ☀	Proof of Concept			Charter		Implementation										
(Reliability)																
6. Robust Security Constrained Optimizations ☀	Proof of Concept		Extend			Charter		Implementation								
(Reliability/Efficiency)																
7. Impedance Scanning tool for stability assessment ☀	Proof of Concept		Expand			Charter		Implementation								
(Reliability)																

Legend: Complete | In-Progress | Potential Next Steps | ☀ On Track | ☀ Delayed | ⟳ Transition | ◆ Decision

Item 6.3

GRIT Technology Initiatives – Roadmaps

Technology Initiative		2025				2026				2027				2028			
(Strategic Objective Alignment)		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
8. Improvements to large load modeling	☀	Proof of Concept Models															
(Reliability)																	
9. Machine learning models for optimal power flows	☀	Proof of Concept				Extend				◆ ⟳ Charter			Implementation				
(Reliability)																	
10. Assessment of short circuit protection	☀		Survey		Feedback		White Paper										
(Reliability)																	
11. Assessment of power quality	☀		White Paper		Research Paper			Feedback		◆ Proof of Concept			⟳ Imp.				
(Reliability)																	
12. Smart grid edge control of loads	☀	Research Paper				Feedback		◆	Proof of Concept			⟳ NPRR			Imp.		
(Reliability)																	
13. Grid forming controls and overload current capability in inverters	☀		White Paper		Research Paper			Feedback		◆ ⟳ NPRR			Implementation				
(Reliability)																	
14. Combined economic/reliability analysis tools	☀	White Paper			◆	Proof of Concept			◆ ⟳	Charter			Imp.				
(Reliability)																	

Legend: **Complete** | **In-Progress** | **Potential Next Steps** | ☀ On Track | ☀ Delayed | ⟳ Transition | ◆ Decision

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GRIT Technology Initiatives – Additions to Roadmap

Technology Initiative	2026				2027				2028				2029			
(Strategic Objective Alignment)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15. Dynamic Ancillary Services	White Paper			⟳	Implementation											
(Reliability/Efficiency)																
16. Large scale EMT need and strategy	White Paper			◆	POC			⟳	Charter		Implementation					
(Reliability)																
17. Open-source data and models	Synthetic network		Data sets													
(Reliability)																
18. Topology Optimization	Proof of Concept			◆	Implementation											
(Reliability/Efficiency)																

Legend: **Complete** **In-Progress** **Potential Next Steps**   ⟳ Transition   ◆ Decision

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