



Large Load Modelling

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November 20, 2025

Grid Research, Innovation, and Transformation (GRIT) Serves ERCOT's Strategic Objectives



Be an industry leader for grid reliability and resilience



Enhance the ERCOT region's economic competitiveness with respect to trends in wholesale power prices and retail electricity rates to consumers



Advance ERCOT Inc. as an independent leading industry expert and an employer of choice by fostering innovation, investing in our people, and emphasizing the importance of our mission

GRIT's purpose, vision, and mission are fully aligned with ERCOT's strategic objectives—driving innovation that enhances grid reliability, improving market efficiency, and ensuring readiness for a rapidly evolving energy landscape.

GRIT Roadmap

Technology Initiative	2024				2025				2026				2027				2028				
(Strategic Objective Alignment)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1. ESR Energy Sufficiency	White Paper				◆	Proof-of-Concept				◆➡	Implementation										
(Reliability/Efficiency)																					
2. Receive operational info from DERs	White Paper				◆	Proof-of-Concept				◆➡	Implementation										
(Reliability/Efficiency)																					
3. Meter data disaggregation for DR	Proof-of-Concept				◆	RFP				◆➡	Implementation										
(Reliability/Efficiency)																					
4. Measure and estimate the regional inertia and system strength	Proof-of-Concept (Phases)								◆➡	Implementation											
(Reliability)																					
5. Reactive power coordination					Proof-of -Concept				◆➡	Charter		Implementation									
(Reliability)																					
6. Robust security constrained optimizations	White Paper				◆	Proof-of-Concept				◆➡	Charter		Implementation								
(Reliability/Efficiency)																					
7. Impedance scanning tool for stability assessment	White Paper				◆	Proof-of-Concept				◆➡	Implementation										
(Reliability)																					

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8. Improvements to large load modeling	White Paper				Proof-of-Concept - Models				Implementation											
<i>(Reliability)</i>																				
9. Machine learning models for optimal power flows	White Paper				Proof-of-Concept				Charter				Implementation							
<i>(Reliability)</i>																				
10. Assessment of short circuit protection									White Paper				MP feedback				Best Practices Guidelines			
<i>(Reliability)</i>																				
11. Assessment of power quality					White Paper				MP feedback				Proof-of-Concept				Charter		Imp.	
<i>(Reliability)</i>																				
12. Smart grid edge control of DERs and load					Research Paper				MP feedback				Proof-of-Concept				Implementation			
<i>(Reliability)</i>																				
13. Overload current capability in inverters							White Paper				MP feedback				Implementation					
<i>(Reliability)</i>																				
14. Combined economic/reliability analysis tools					White Paper				Proof-of-Concept				Charter				Implementation			
<i>(Reliability)</i>																				

Large Load Modelling

Background:

- Models developed in collaboration with Texas A&M University
- **Generic** models with the goal of summarizing our understanding of large electronics load in a model that can help save time on circular conversations
- The **site-specific models** should reflect the actual site which will be different from generic models

Models:

- [Crypto Mining](#)
- Data Centers – Four architecture based on Open Compute Project (OCP) public information
- Electrolyzer