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Item 5.2.2: New Market Facing Functionalities - Large Load Curtailment Manager and Real Time Operation Communications Tool

Jimmy Hartmann
Sr. Director, Control Room Operations and Ops Training

Sreenivas Badri
Sr. Director, Grid and Market Solution (GMS)

Technology and Security Committee Meeting

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Purpose

Large Load Curtailment Manager and Real Time Operation Communications Tools overview

For information only

No action is requested; for discussion only.

Key Takeaways

- Large Load Curtailment Manager (LLCM) will go live in June with minimum viable product (MVP) related to net metering use case of Senate Bill 6.
- Real Time Operation Communications (RTOC) Tool enhances ERCOT control room current Hotline call communications with QSEs/TOs during normal and emergency operations.

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Large Load Curtailment Manager (LLCM)

BACKGROUND

- Three separate drivers — SB6 policy requirements, steady-state frequency operating limits, and NPRR1238 — require ERCOT to issue curtailment instructions to certain Large Loads based on operating conditions
- ERCOT is developing a Control Room-facing tool, the LLCM, to help ERCOT Operators to identify when curtailment of Large Loads is needed and issue deployment instruction to the responsible entities.
- This tool will enhance operational efficiency, reduce manual actions, and improve grid reliability.
- ERCOT is developing LLCM in parallel with the NPRR process, with configurable workflows and parameters that can be adjusted to reflect stakeholder input and final market rule outcomes.

TIMELINES

Phase 1 – MVP

Net-metering SB6 use case (i.e. Co-located with an existing Generating Resource)
Target: End of June 2026 | **Status:** In Implementation

Future Phases

NPRR1238-VECL, SB6 50% backup generation,202C
Target: Later in 2026

SCOPE – PHASE 1

- Provide forward-looking assessment (i.e. forecast) of operating reserve margin to identify when a Large Load curtailment under SB6 may be initiated.
- LLCM tool issues XML instructions to selected Large Loads (net-metering arrangements under SB6).
- Accounting of instructed SB6 Large Load curtailment in SCED reliability deployment price adder.

Key Takeaway: ERCOT is developing the Large Load Curtailment Manager (LLCM) to enable ERCOT operators to proactively identify when large load curtailment is needed and efficiently issue deployment instructions to improve grid reliability.

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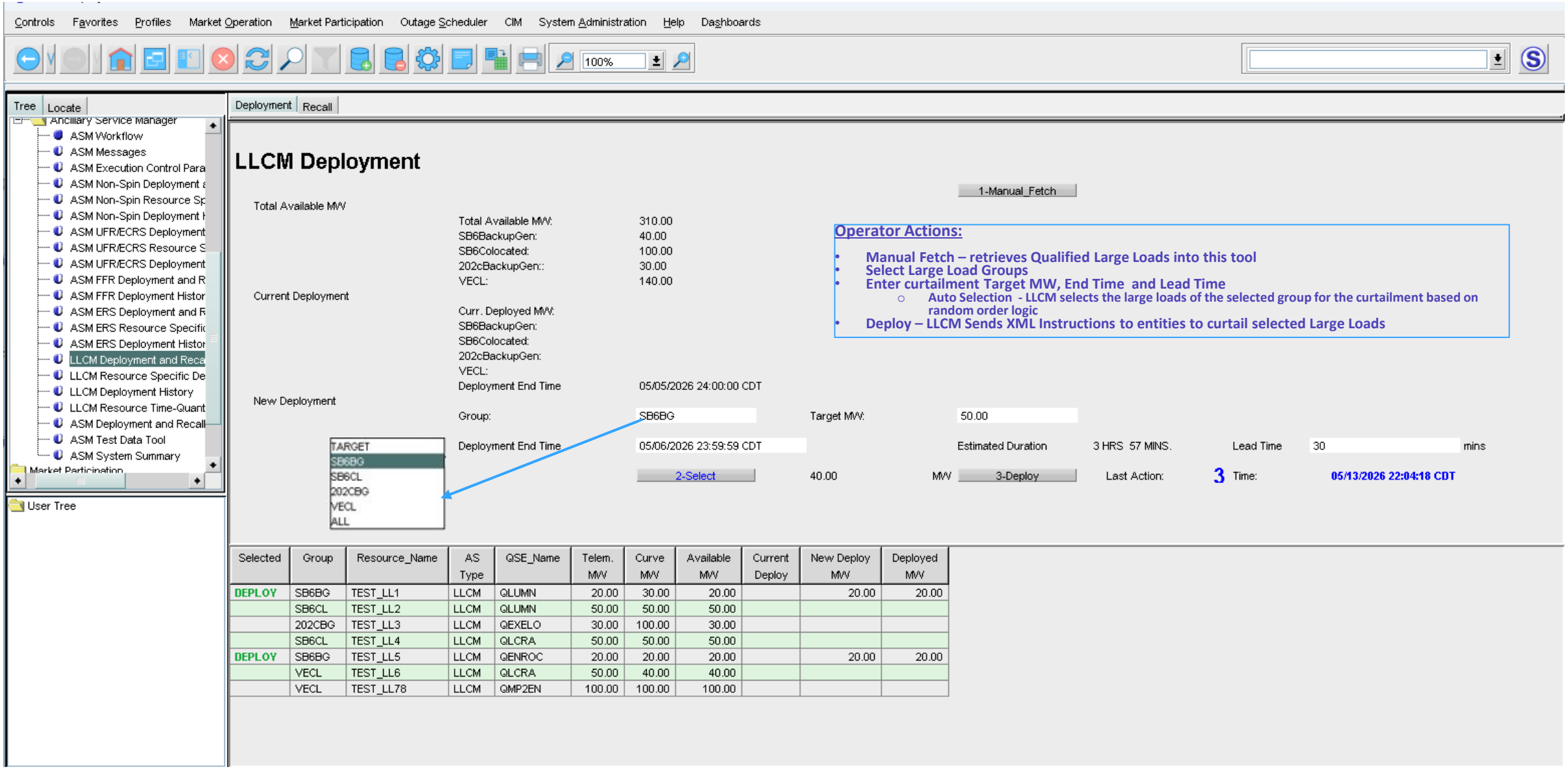
Large Load Curtailment Manager (LLCM) Tool



Selected	Group	Resource_Name	AS Type	QSE_Name	Telem. MW	Curve MW	Available MW	Current Deploy	New Deploy MW	Deployed MW
DEPLOY	SB6BG	TEST_LL1	LLCM	QLUMN	20.00	30.00	20.00		20.00	20.00
	SB6CL	TEST_LL2	LLCM	QLUMN	50.00	50.00	50.00			
	202CBG	TEST_LL3	LLCM	QEXELO	30.00	100.00	30.00			
	SB6CL	TEST_LL4	LLCM	QLCRA	50.00	50.00	50.00			
DEPLOY	SB6BG	TEST_LL5	LLCM	QENROC	20.00	20.00	20.00		20.00	20.00
	VECL	TEST_LL6	LLCM	QLCRA	50.00	40.00	40.00			
	VECL	TEST_LL78	LLCM	QMP2EN	100.00	100.00	100.00			

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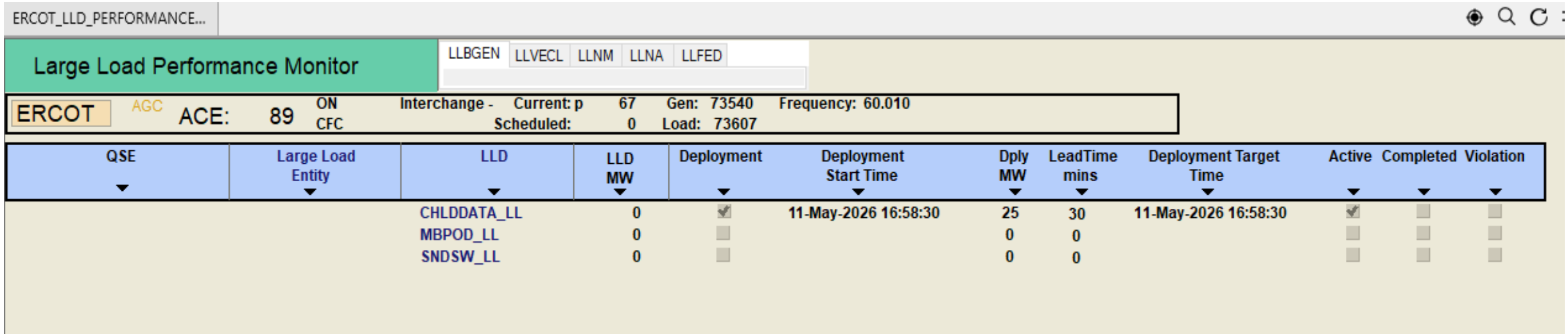
Large Load Performance Monitoring in Real-Time

OVERVIEW

Large load performance monitoring display is built in Energy Management System (EMS) to provide ERCOT Operators with real-time situational awareness.

This EMS display provides real-time visibility into each Large Load's current consumption levels and curtailment status by tracking the average actual load reduction over a specified lead time against instructed curtailment target.



Key Takeaway: Large Load Performance Monitoring display in EMS provides ERCOT Operators real-time visibility into each Large Load's consumption and curtailment status.

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Real Time Operation Communications (RTOC) Tool

BACKGROUND

- ERCOT Control Room currently uses Hotline Phone Calls as the primary method to communicate with TOs/QSEs operators when there is a grid event or system change.
- During emergency operations such as EEA event, the number of phone calls can become overwhelming for operators.
- SCR820 introduces RTOC tool to enhance ERCOT Hotline communication process, supporting three-part communications between ERCOT, TOs, and QSEs with Resources during normal and emergency operations.

KEY BENEFITS

- Significant reduction of phone calls as primary communication method.
- Message exchange like internet-based email between ERCOT and TOs/QSEs.
- Prepopulated templates streamline message crafting (e.g., Load Shed Template).
- All TOs/QSEs can confirm receipt for one-to-many broadcasts.
- Provides a log of all messages so that if an operator is pulled away, the operator can quickly reference logged communications with no information lost.
- Tool stores communications for real-time tracking and post-event analysis.

Key Takeaway: This new RTOC tool enhances and modernizes ERCOT's Control Room real-time communications by reducing reliance on Hotline calls and providing a streamlined, logged, and template-driven messaging platform for both normal and emergency operations.

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Real Time Operation Communications (RTOC) - Timelines

2024	2025 Q1–Q2	2025 Q3–2026 Q2	2026 Q2-Q3	2027 Q1	2027 Q2
Proof of Concept	**Requirements and Design**	**Development**	**Market Testing**	**Parallel Operations**	**Go-Live**
• Developed RTOC PoC Tool and made available to Market (TOs) . • TOs evaluated tool capabilities and provided feedback.	• Requirements developed. • Incorporated market feedback in requirements. • Design completed.	• Development completed. • Internal testing is In Progress.	• RTOC deployed into Production. • TOs are actively testing. • QSEs onboarding and testing is In Progress. • **Developing draft NPRR** to update Protocols that allow Control Room to use this tool in addition to current Hotline Call	• ERCOT and TOs/QSEs Test and verify RTOC messages in conjunction with Hotline Calls. • RTOC will not be a designed communication medium and Hotline calls will be required. • Timing depends on NPRR approval	• RTOC is introduced into control rooms as a monitored 24x7 communication tool during normal and emergency operations. • Timing depends on NPRR approval

Key Takeaways: ERCOT engaged market participants early in the process and incorporated their feedback into the requirements. The start of parallel operations and the RTOC go-live will depend on NPRR approval.

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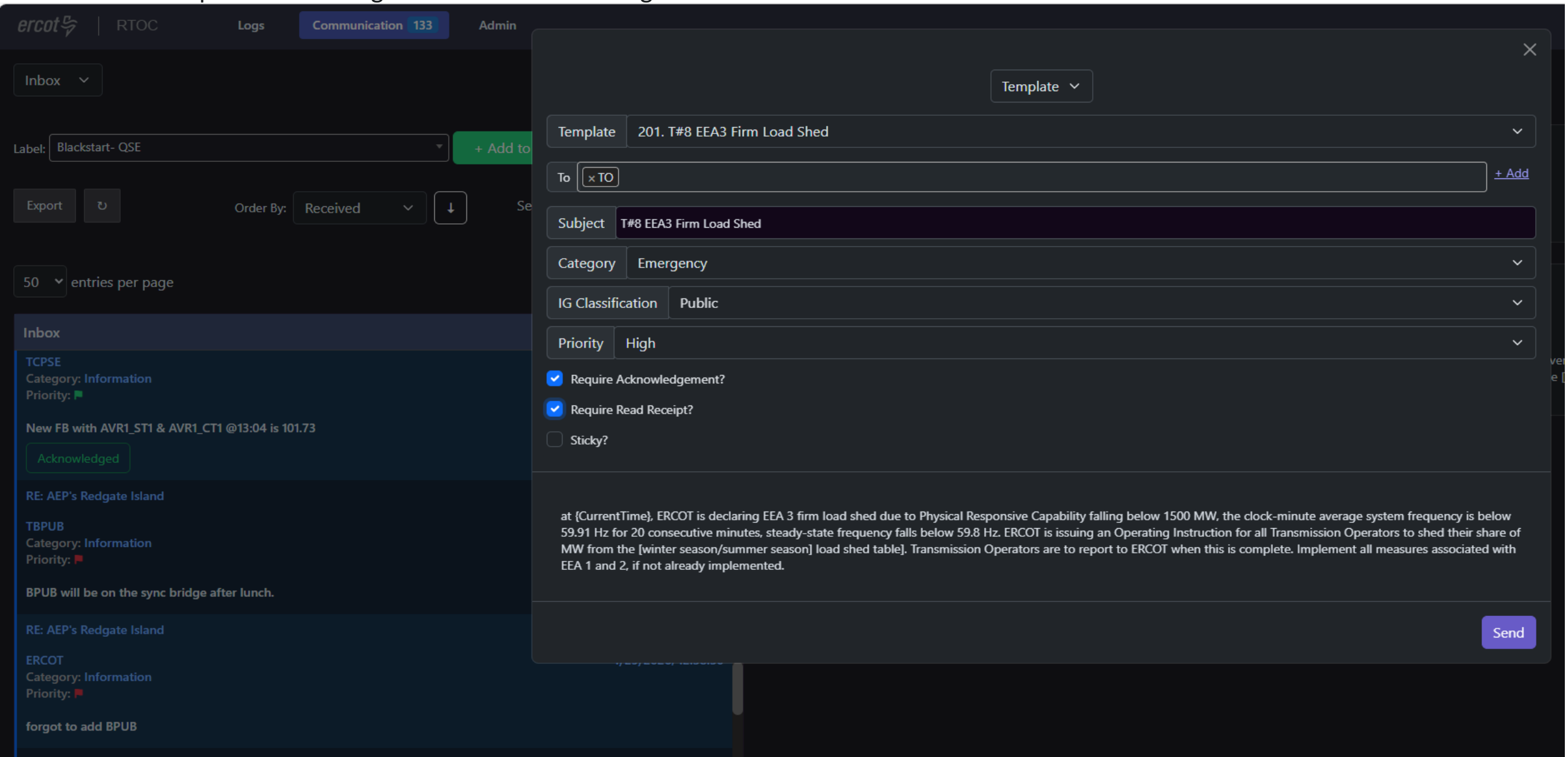
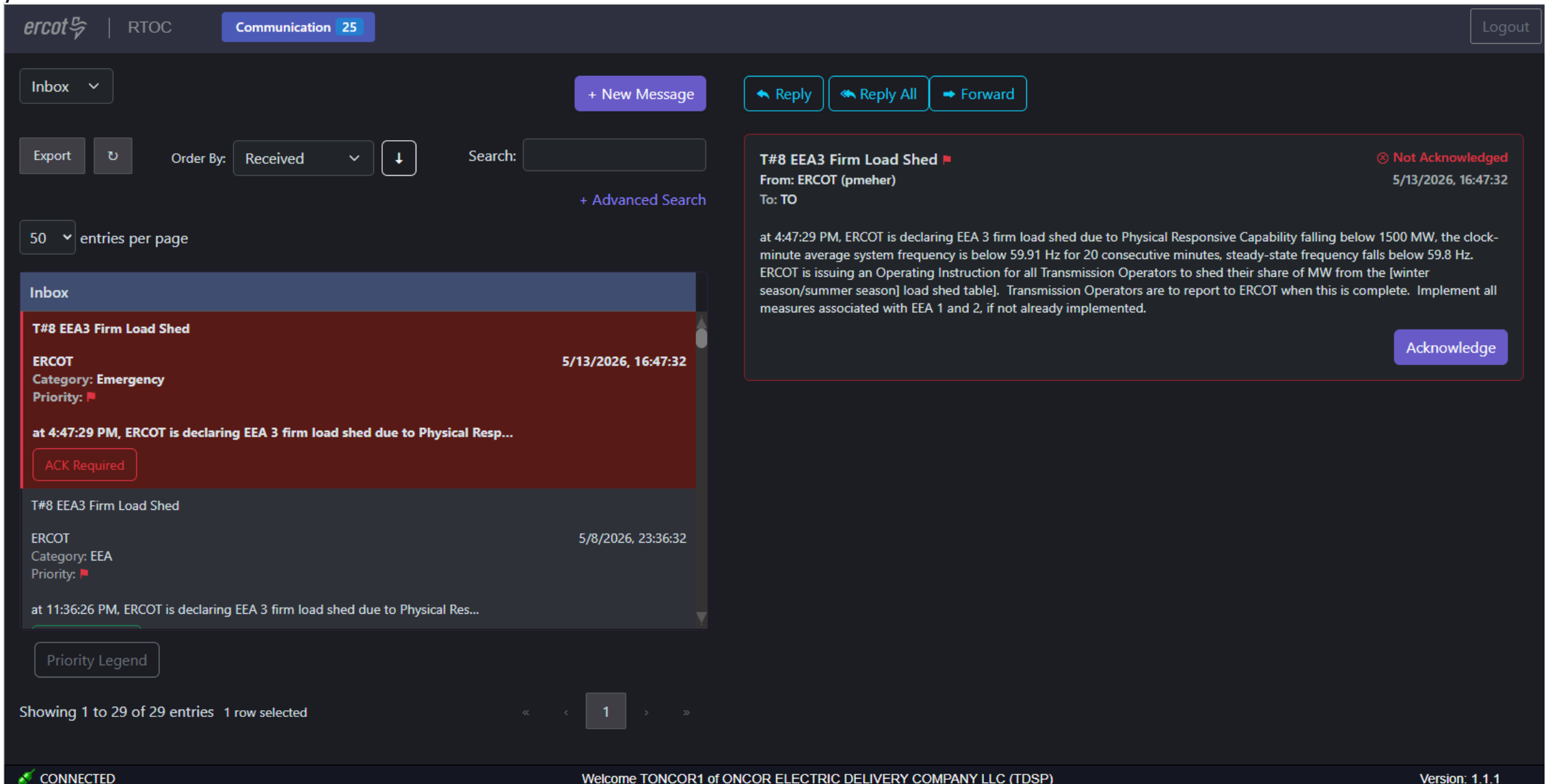
Real-Time Operation Communications (RTOC) Tool

- ERCOT Operator initiating a firm load shed message.



Real-Time Operation Communications (RTOC) Tool

- Load shed message in TOs view before acknowledgement - Highlights load shed commands visually and audibly until acknowledged by TOs.



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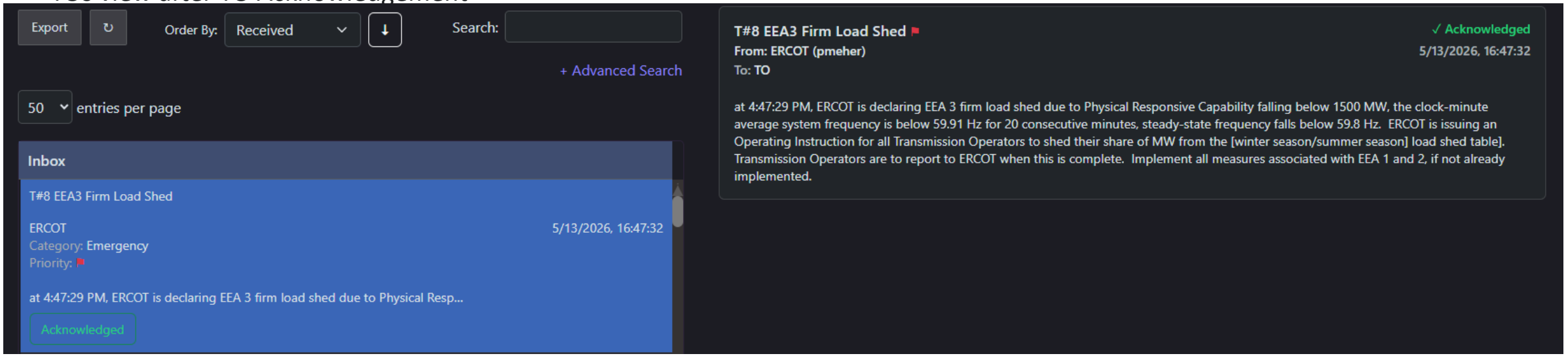
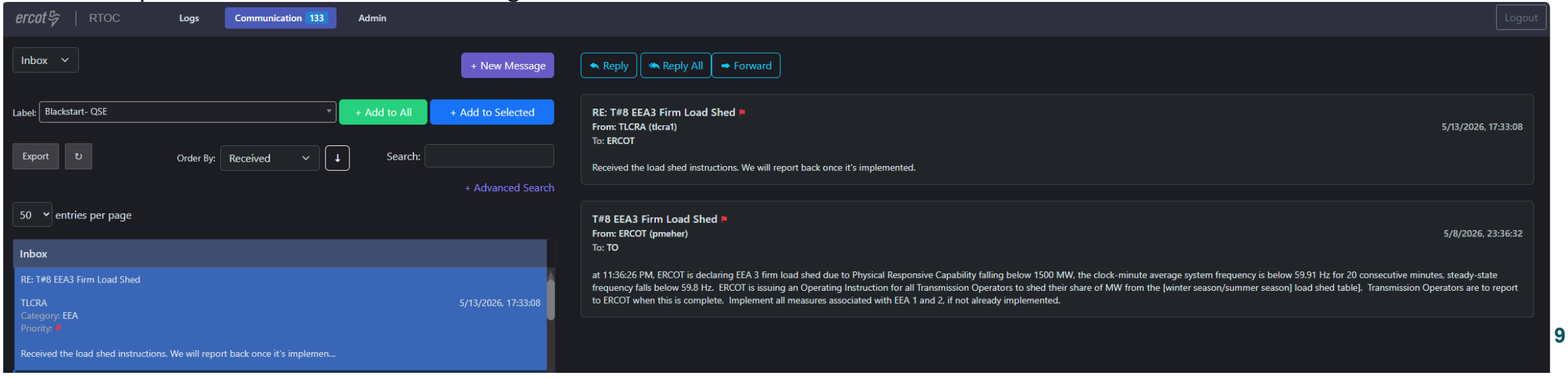
Real-Time Operation Communications (RTOC) Tool

- TOs view after TO Acknowledgement



- ERCOT Operator view after TO Acknowledgement



Appendix

- Large Load Curtailment Manager (LLCM) Tool – Recall Display
- Real-Time Operation Communications (RTOC) Tool Displays – Dashboard and EEA Message

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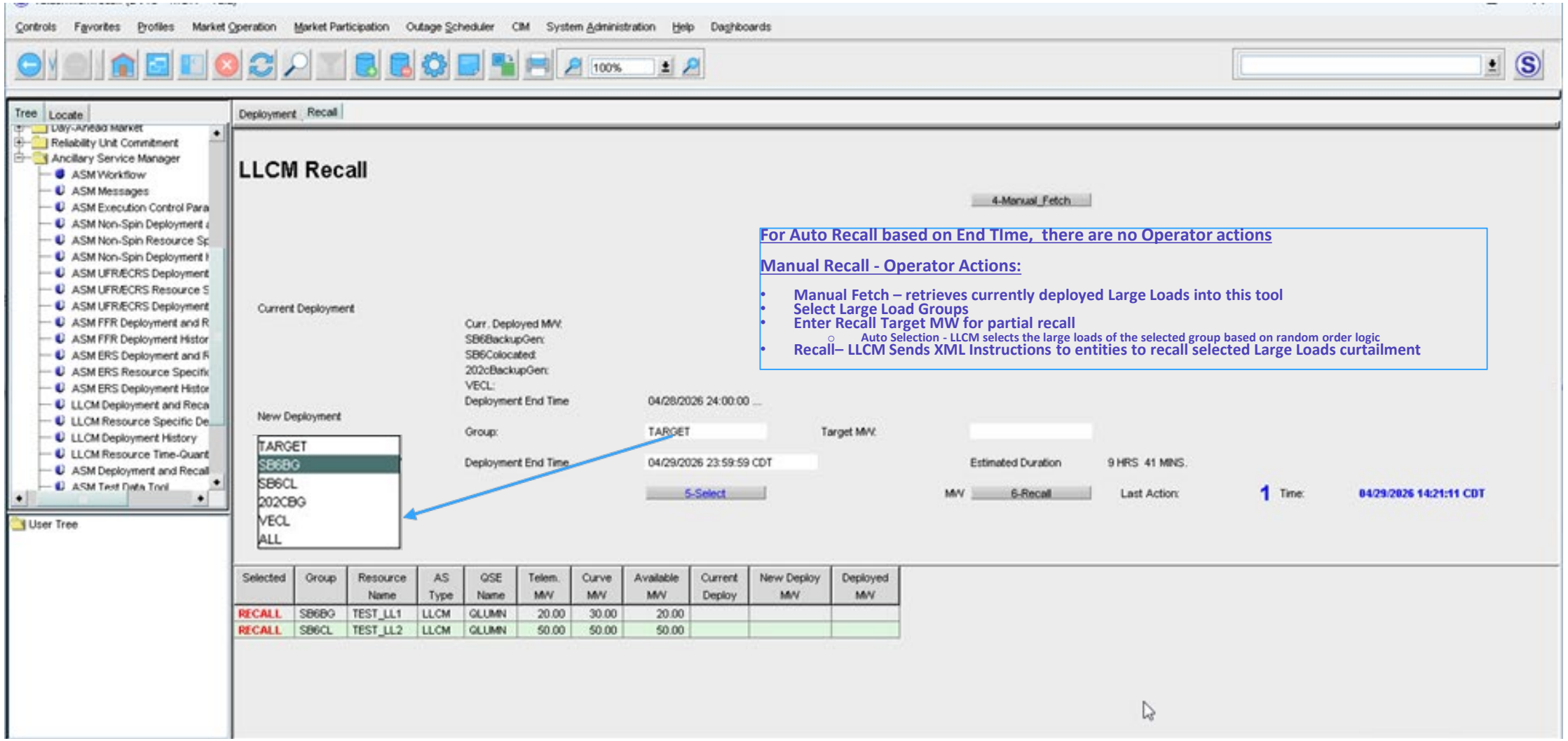
Large Load Curtailment Manager (LLCM) Tool - Recall



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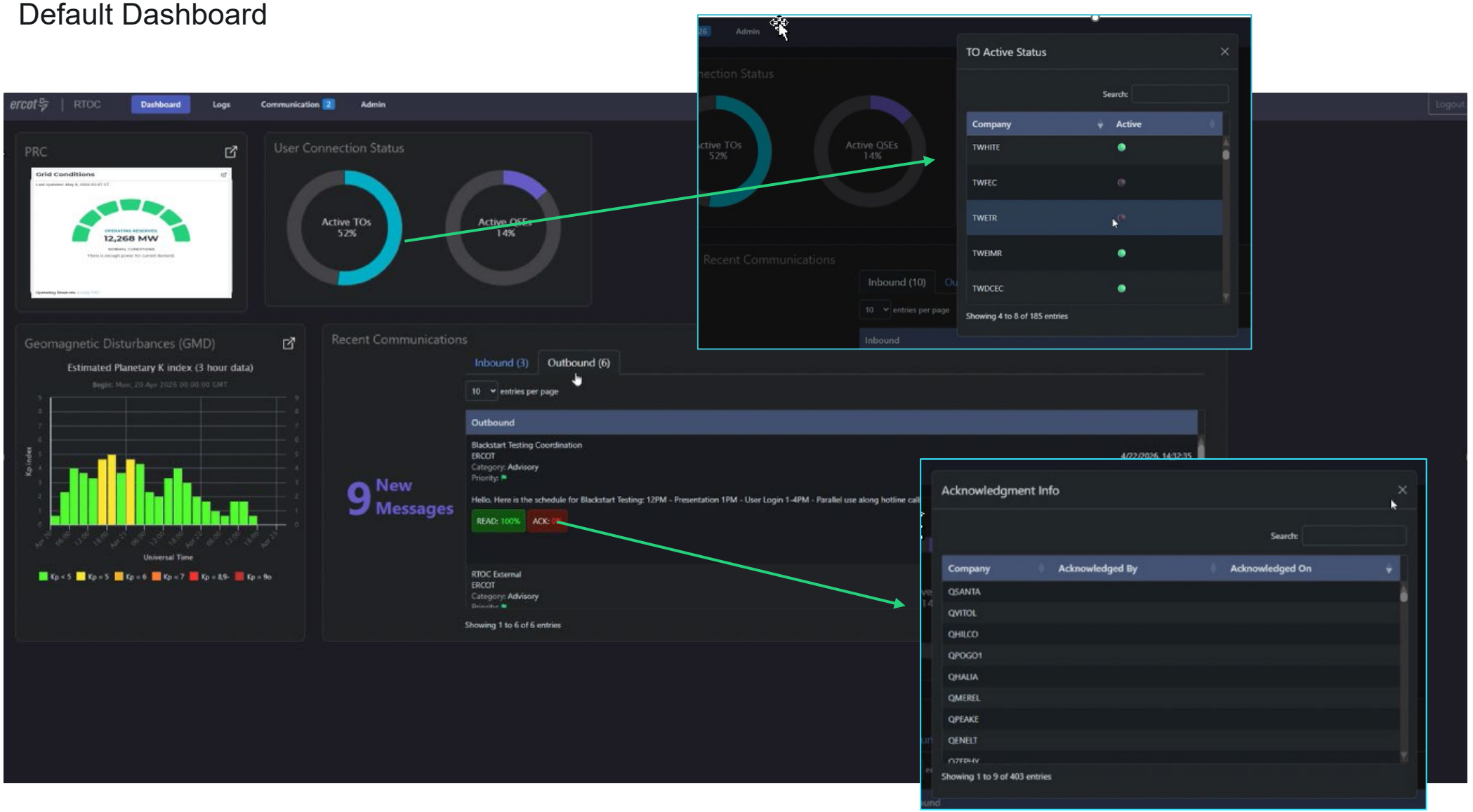
Real-Time Operation Communications (RTOC) Tool

- Default Dashboard



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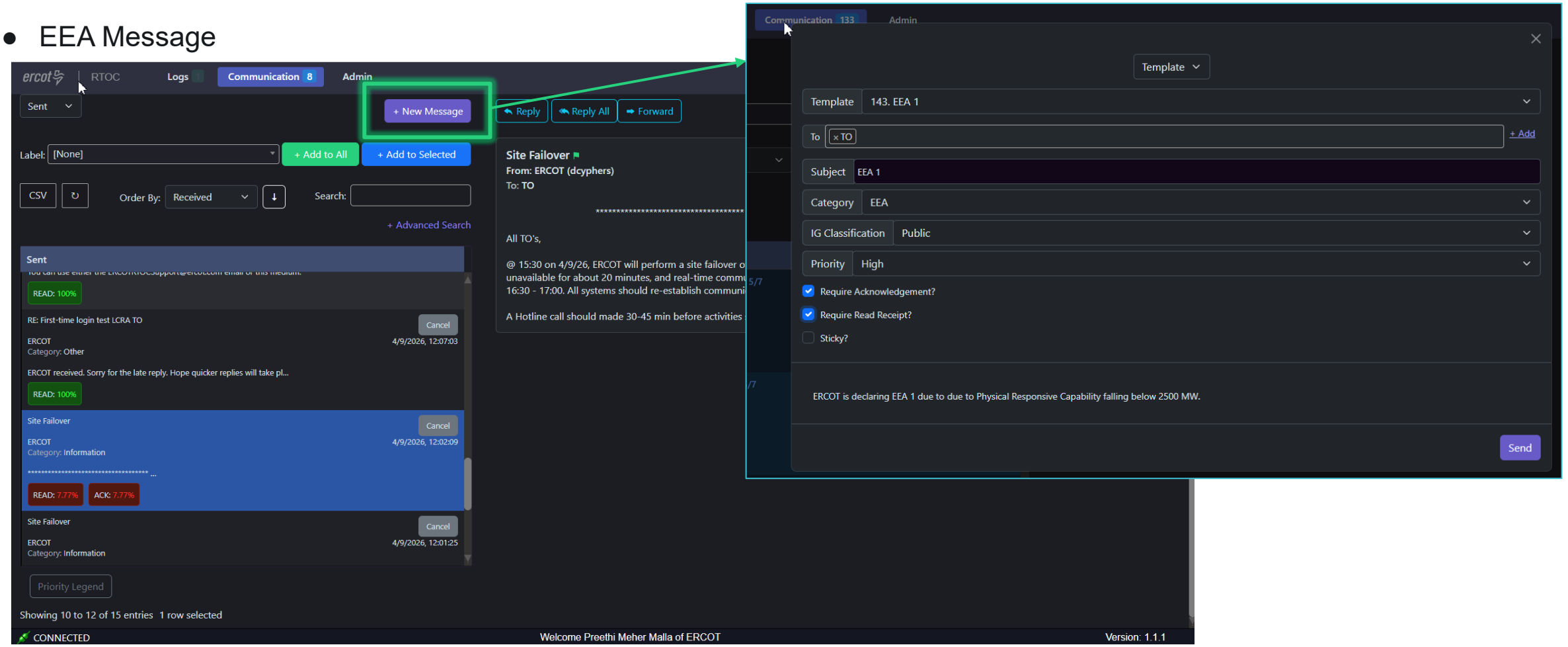
Real-Time Operation Communication (RTOC) Tool

- EEA Message



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Real-Time Operation Communication (RTOC) Tool

- EEA Message template full screen