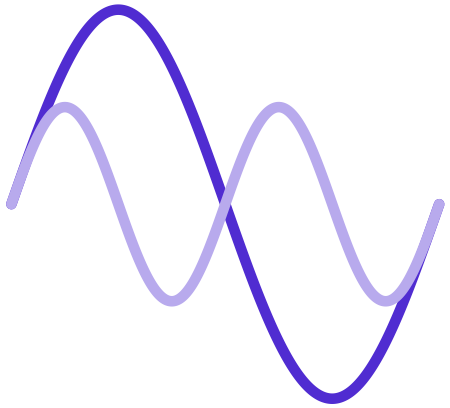


Agentic Infrastructure

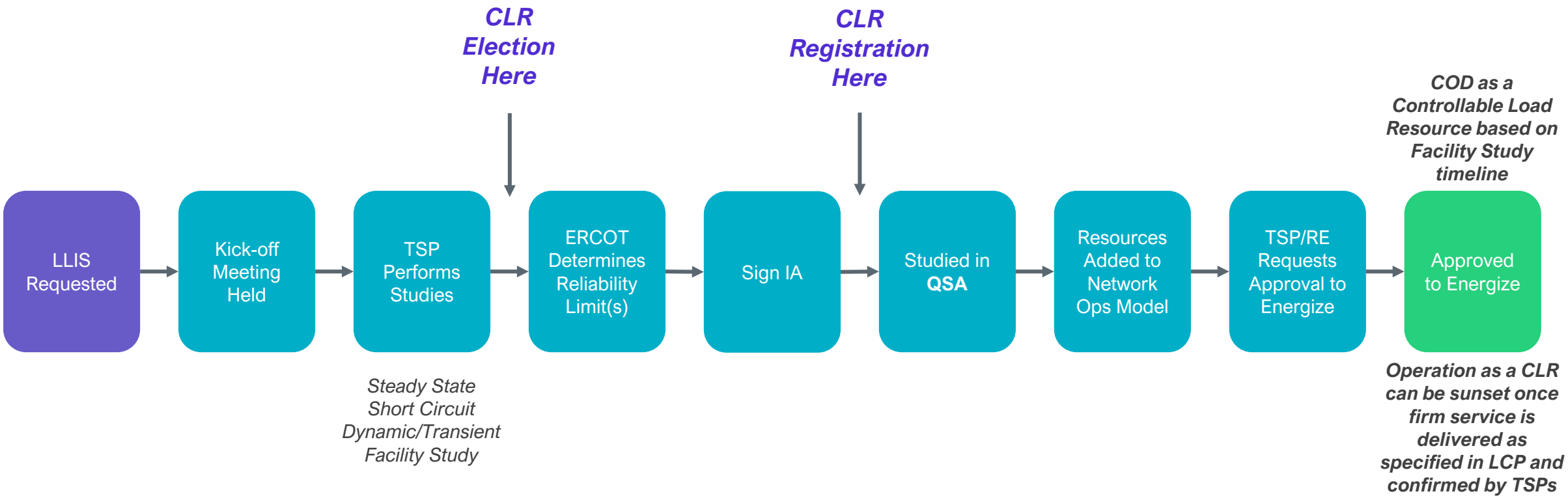
Dispatchable Loads

Prepared for 11.18 PLWG

November 2025

LLIS with Controllable Load Election

Large Load Interconnection Study Process (PGRR115)



LLIS Process Impact Summary

- CLR Election after completion of Steady State analysis acknowledges that thermal constraints will be managed via curtailment by ERCOT in real-time operations for the period in which the load is operating as a CLR
  - Can be applied retroactively to projects with Steady State analysis already completed without any restudy

- CLR Load assumes all risk of what curtailment looks like during period with interruptible service

- If study of load drives voltage or stability related transmission upgrades (anything not captured in SCED), CLR election will not enable energize until those upgrades are complete

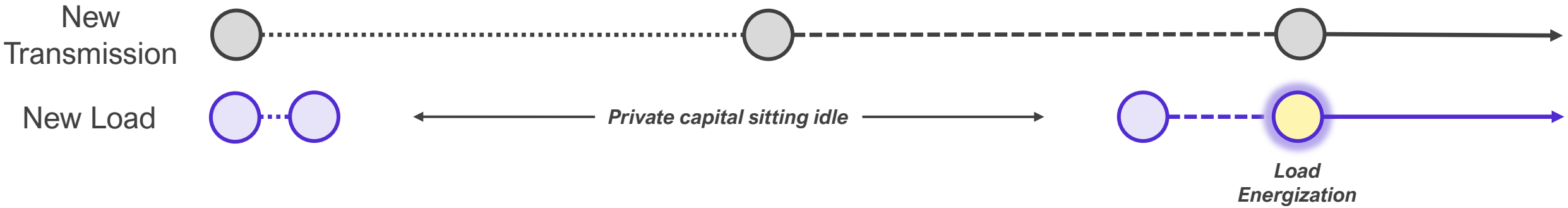
- Facility Study timing may be amended to reflect resources advancing as CLRs

Speed to Power w/ Dispatchable Load

Existing Structure for New Load: Firm Load Service Planning Only

Construction of new transmission infrastructure the speed to power for new load to energize

This can delay new load build by 3 – 7+ years



New Option for Service as Dispatchable Loads (PGRR134)

Private capital can energize new load right away with dispatchable service

With load growth secured ahead of network upgrades, the public planning process for transmission *also moves faster*

Privately assumed delivery risk accelerates <u>all</u> infrastructure expansion!

Recap: Controllable Load Resources

Controllable Load Resource (CLR)
A Load Resource capable of controllably reducing or increasing consumption under ***Dispatch control by ERCOT***

Today, dispatchable resources (Generation) benefit in planning studies from the assumption that transmission constraints can be managed in real-time operations via Security Constrained Economic Dispatch (SCED)

- Colloquially known as "Connect and Manage"
- *This treatment is not given to CLRs today due to zonal dispatch and CLR load ability to telemeter on outage while maintaining consumption*

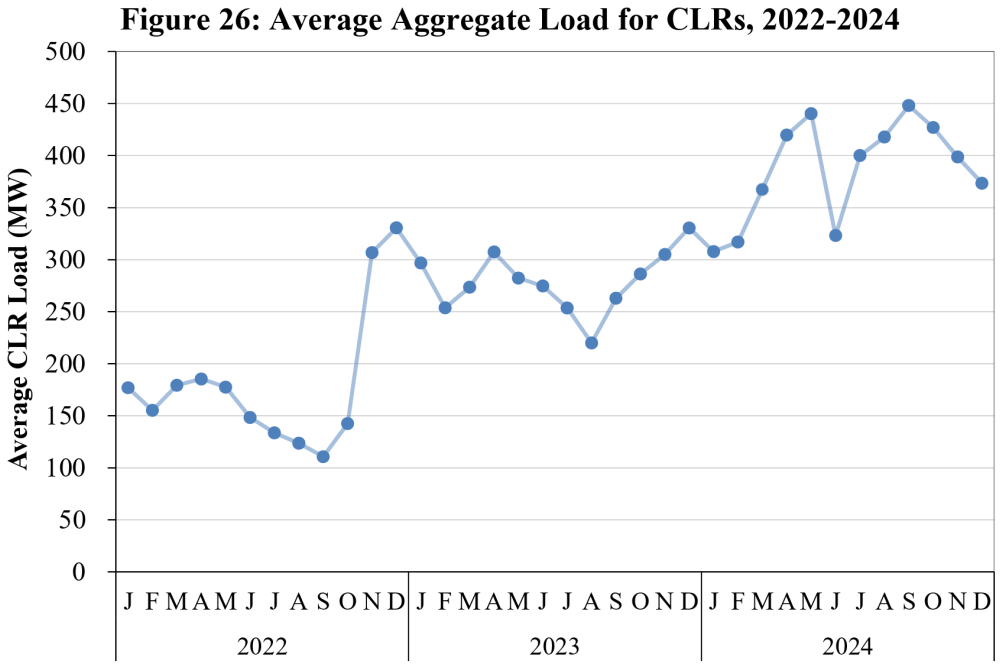
NPRR 1188/OBDRR046: Makes CLRs settled and dispatched at the resource node

- *A CLR must participate in SCED when consuming energy.*
- *A CLR will be dispatched according to Nodal Shift Factors (same as Generation Resources).*
- *CLR Ancillary Service bids will be co-optimized in the Day Ahead Market.*
- *CLRs will receive Nodal settlement instead of Zonal settlement.*
- *Currently awaiting implementation post Real Time Co-optimization (RTC) estimated **Q3 2026***

PGRR134: Loads need the option to be planned as a nodal CLR Today

- ***Post-NPRR1188 study of CLRs opens the door for "connect and manage" load planning treatment***

Current CLR Load in ERCOT

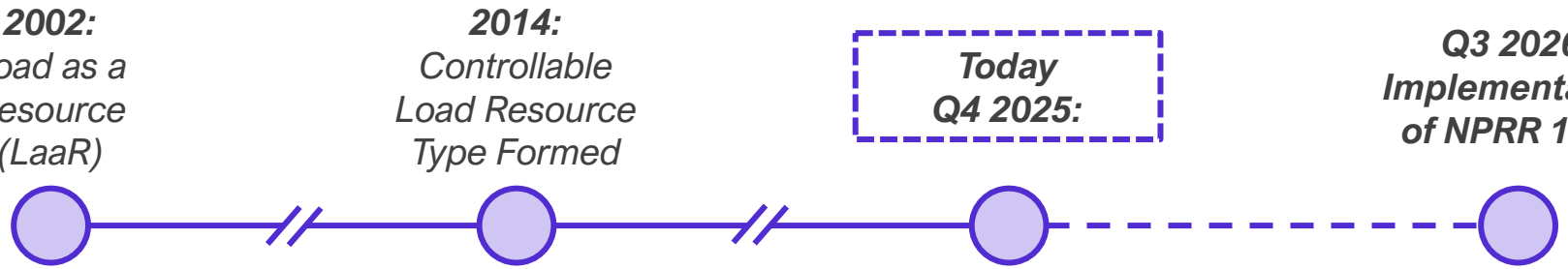


Potomac ERCOT 2024 State of the Market Report

Recap: Controllable Load Status Today

ERCOT Board and PUCT have already approved the rule change (NPRR 1188) which unlocks improved planning flexibility for CLRs, ***but implementation is too slow for current planning needs***

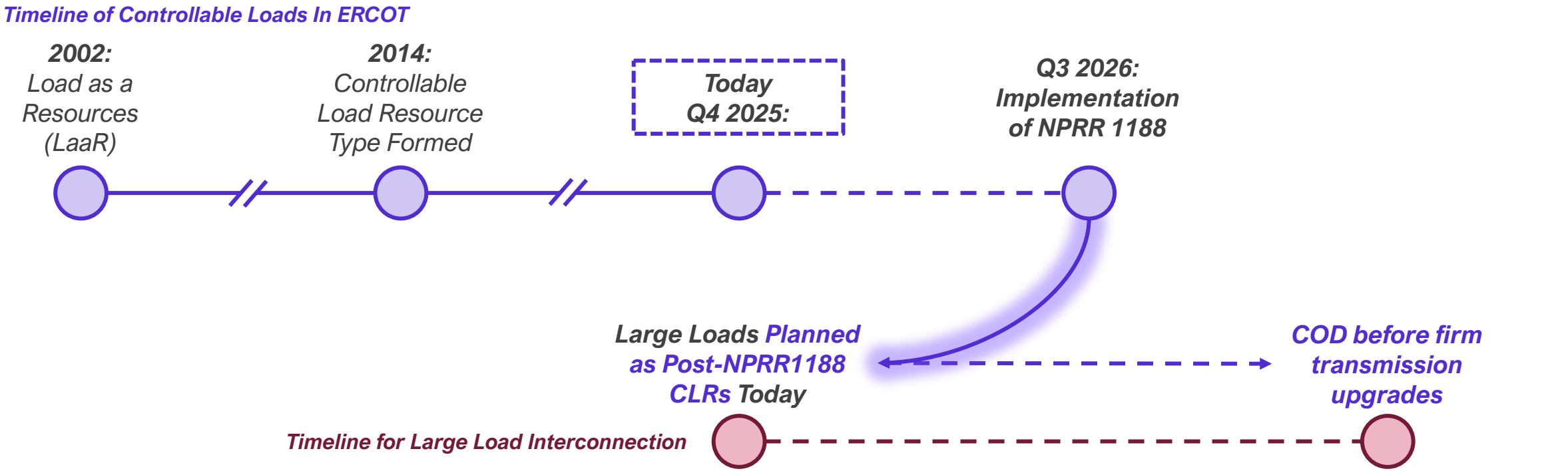
Timeline of Controllable Loads In ERCOT



New Large Loads planned as firm today will be delayed by transmission network upgrades

Recap: Proposed Rule Change

Planning Guide Revision Request (PGRR) would allow Large Loads to be studied as dispatchable in Interconnection studies today, *acknowledging that loads will commission after NPRR1188 Implementation*



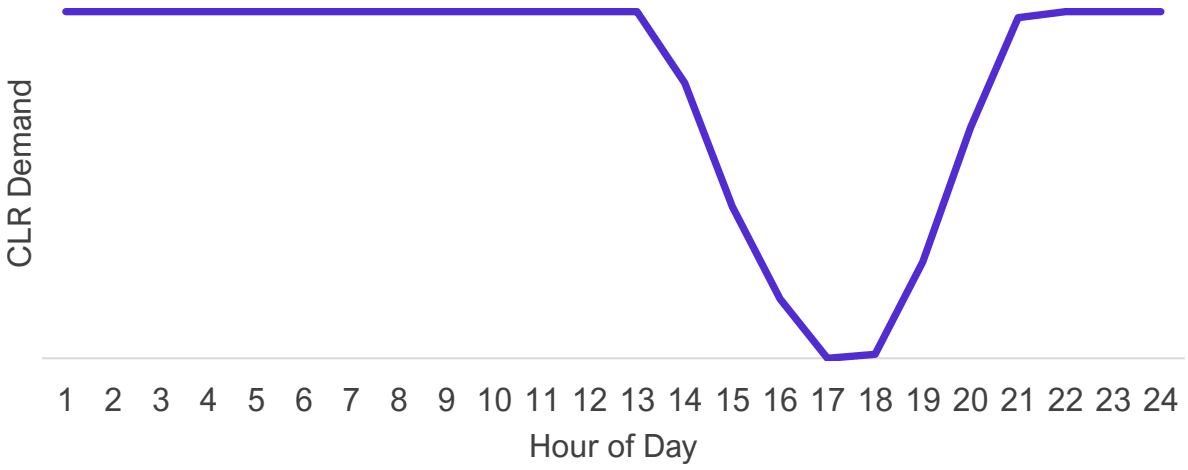
This CLR treatment in planning studies can significantly accelerate interconnection timelines

Recap: Example Scenario

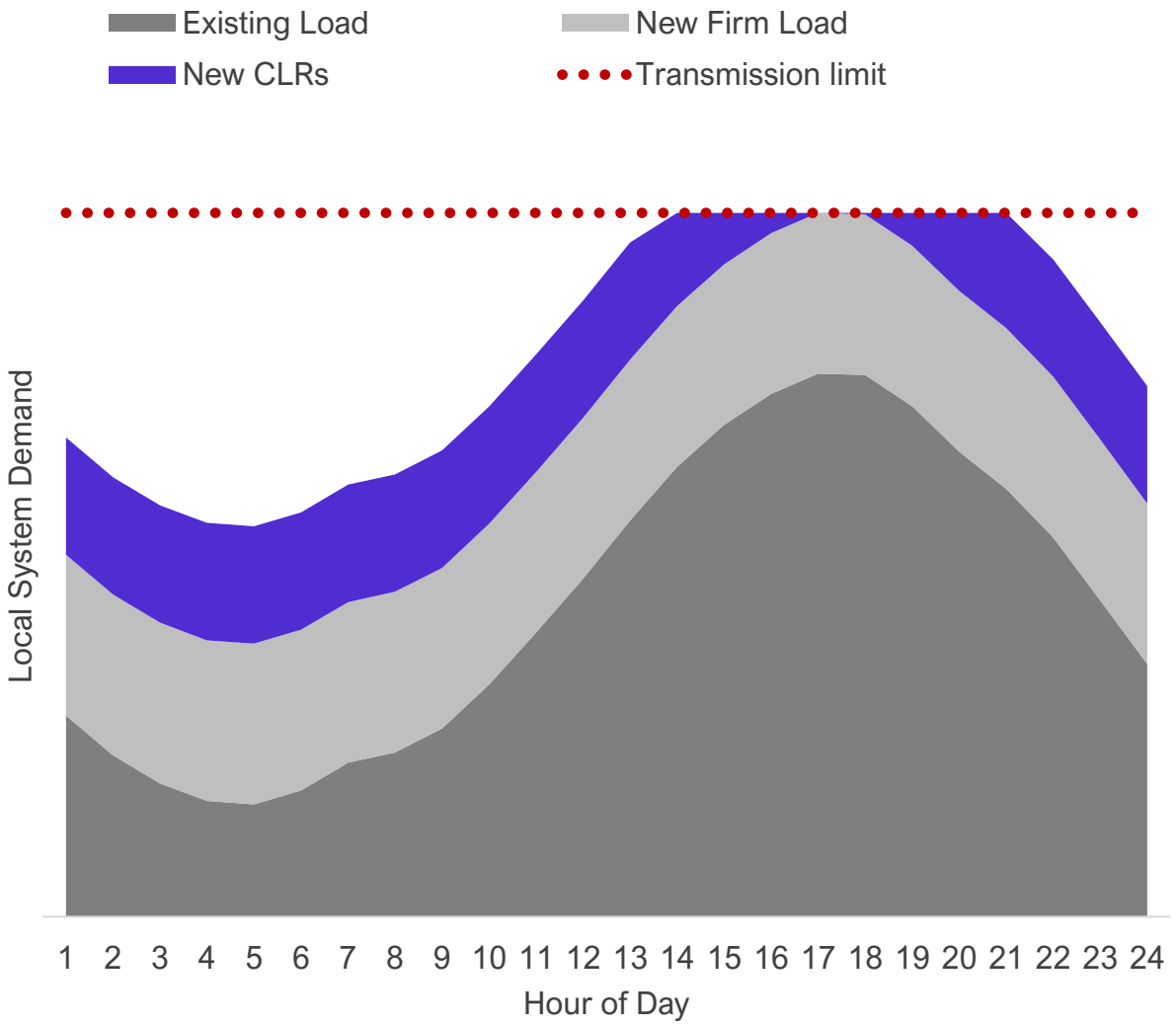
Scenario

1. Existing load and transmission infrastructure can accommodate load growth before reaching local limits
2. New firm load is added until transmission limits are reached
3. Additional new loads, which elect to be CLRs, are allowed to connect and privately manage transmission constraints in real time operations

CLR Operating Profile for Example Scenario



Example Scenario of Firm Load and CLR Additions



Recap: Planning Nuance

What this PGRR does:

1. **Provides a path to energize loads ahead of their Load Commissioning Plan (LCP) where Transmission violations limit load adoption** and can be resolved via redispatch of CLR down to its Low Power Consumption (LPC) point
2. Allows private developers to assume delivery risk on an interim basis in exchange for energization ahead of LCP
    - All loads still receive firm service eventually
3. Provides for optional path to compliance with pending SB6 curtailment obligations
4. Technology Agnostic Approach: Once electing treatment as a CLR, developer/owner determines how they plan to comply with CLR requirements
5. Design agnostic approach supports Front of Meter or Behind the Meter co-location schemes

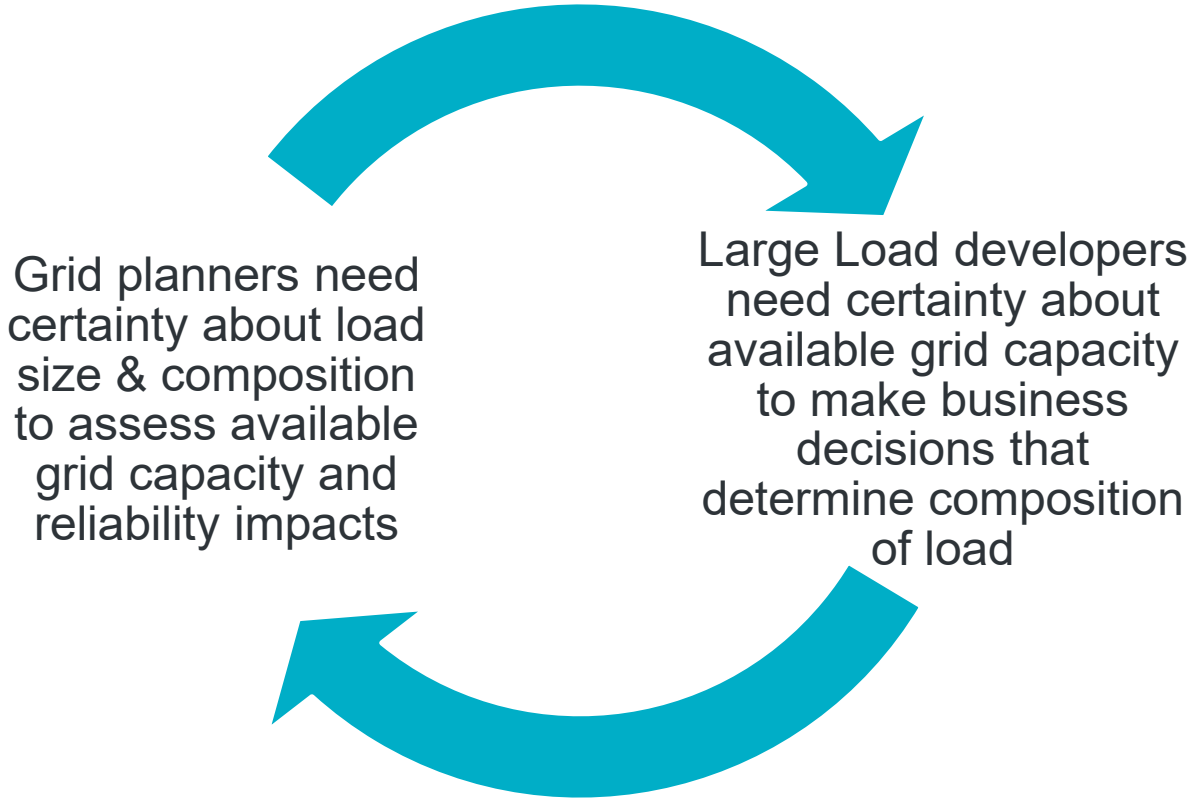
What this PGRR *doesn't* do:

1. Does not allow CLRs to "take" firm system capacity which would otherwise serve other firm loads
2. Does not provide a fix-all solution for all load integration challenges
    - Ride through, voltage stability, sub-synchronous oscillations and other dynamic issues remain key risks
3. Does not provide prespecified parameters regarding the dispatch shape/frequency/duration to managing constraints at the project node
    - Location specific and may change over time as firm load is added
4. Does not change the Large Load Interconnection Study process or study treatment of loads for eventual delivery of firm service
    - LCP still reflects timeline and queue position for firm service

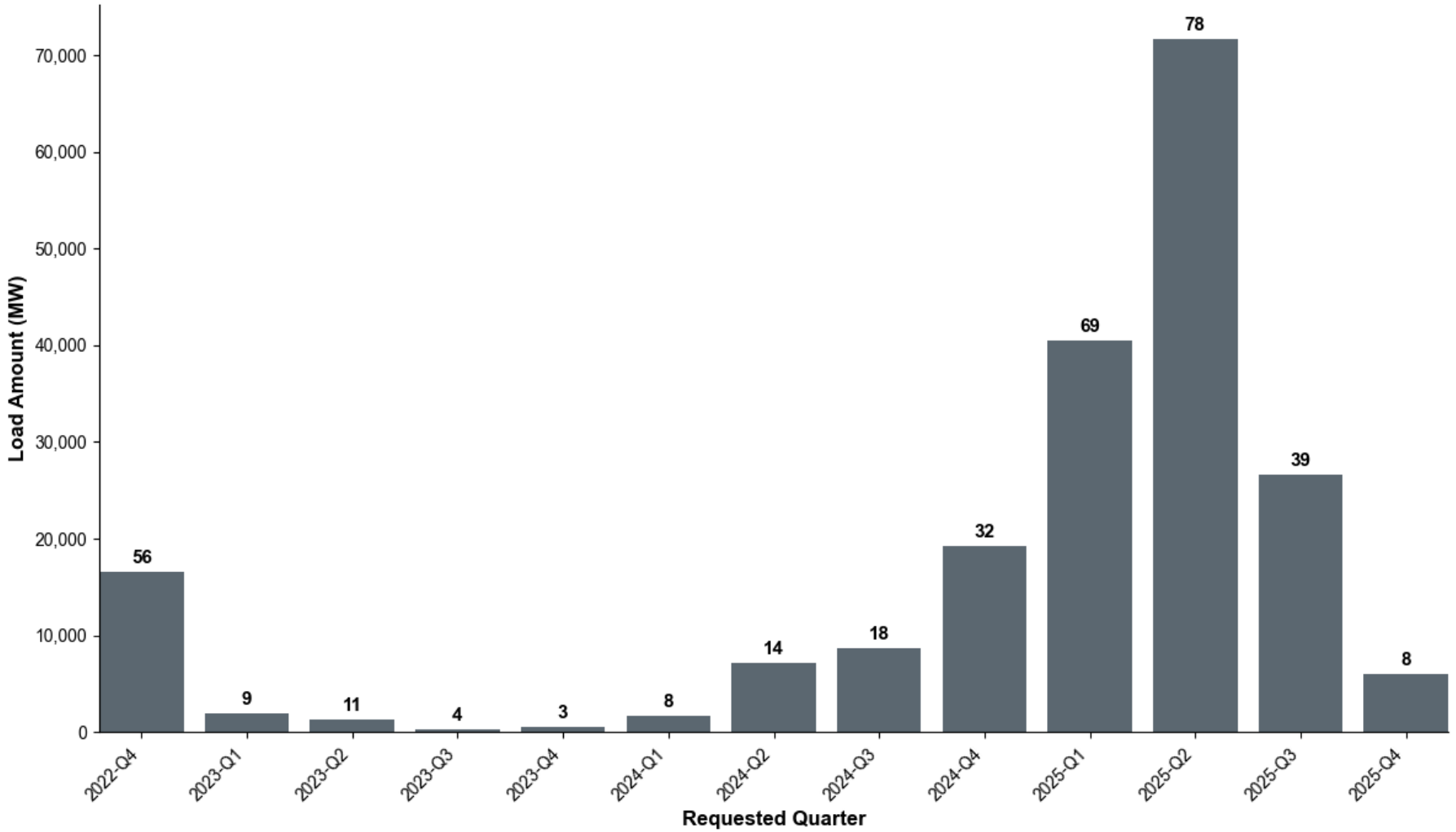
Challenge – Individual Study Approach and Restudies

From 10.24 LLWG & 10.23 PUCT ERCOT Presentations

- Both parties need certainty during the planning phase
- Lack of information requires assumptions
  - Which loads to include in study area
  - Load composition and dynamic response
- Small changes in study assumptions and load model parameters can dramatically change study outcomes
- Uncertainty and sheer volume of requests is straining the individual study approach



Large Load Project Submittal Date



From 10.24 LLWG & 10.23 PUCT ERCOT Presentations

Challenges Manifesting in Each Phase of the Current Process

Phase 1
Interconnection Request and Planning Studies

Challenges

- Many customers are seeking connection in specific areas (WTX, DFW, etc.). So, study assumptions may quickly become outdated as additional customers arrive in an area.
- There are many unsigned "officer letter" loads in the planning cases. This makes studies difficult because it is not known which of these loads will actually connect (issues identified in studies may or may not be real).
- Mismatch between assumptions in LLIS and other ERCOT planning studies – can be difficult to get transmission upgrades approved.

Phase 2
Agreements and Modeling

Challenges

- TSPs can sign agreements with customers before studies are completed. This creates an expectation from the customer that the signed load can be served.

Studies often require updates if other area loads sign agreements

Phase 3
Approval to Energize

Challenges

- Requirements are evolving as ERCOT better understands the risks posed by these Large Loads. This can lead to new requirements that are identified after customer has already started construction.
- Communication gap - approval of planning studies is not an approval to energize

Studies may need to be updated as the industry recognizes new reliability risks associated with these types of loads

From 10.24 LLWG & 10.23 PUCT ERCOT Presentations

Evolution of the LLI Process – Possible Options

- Consider system-wide or regional studies to eliminate restudies
- Prioritize Large Loads that can positively impact both transmission and resource adequacy
  - Registration as a Controllable Load Resource (CLR) – dependent on implementation of NPRR1188/NPRR1244
  - Credit for bringing own generation
- Create single source submittal of Large Load information to ERCOT
- Standardization across TSPs via PUC's proposed load forecast and load interconnection standards
- Re-evaluate whether direct relationship is needed between ERCOT & Large Load customers to increase transparency and efficiency in process

From 10.24 LLWG & 10.23 PUCT ERCOT Presentations