

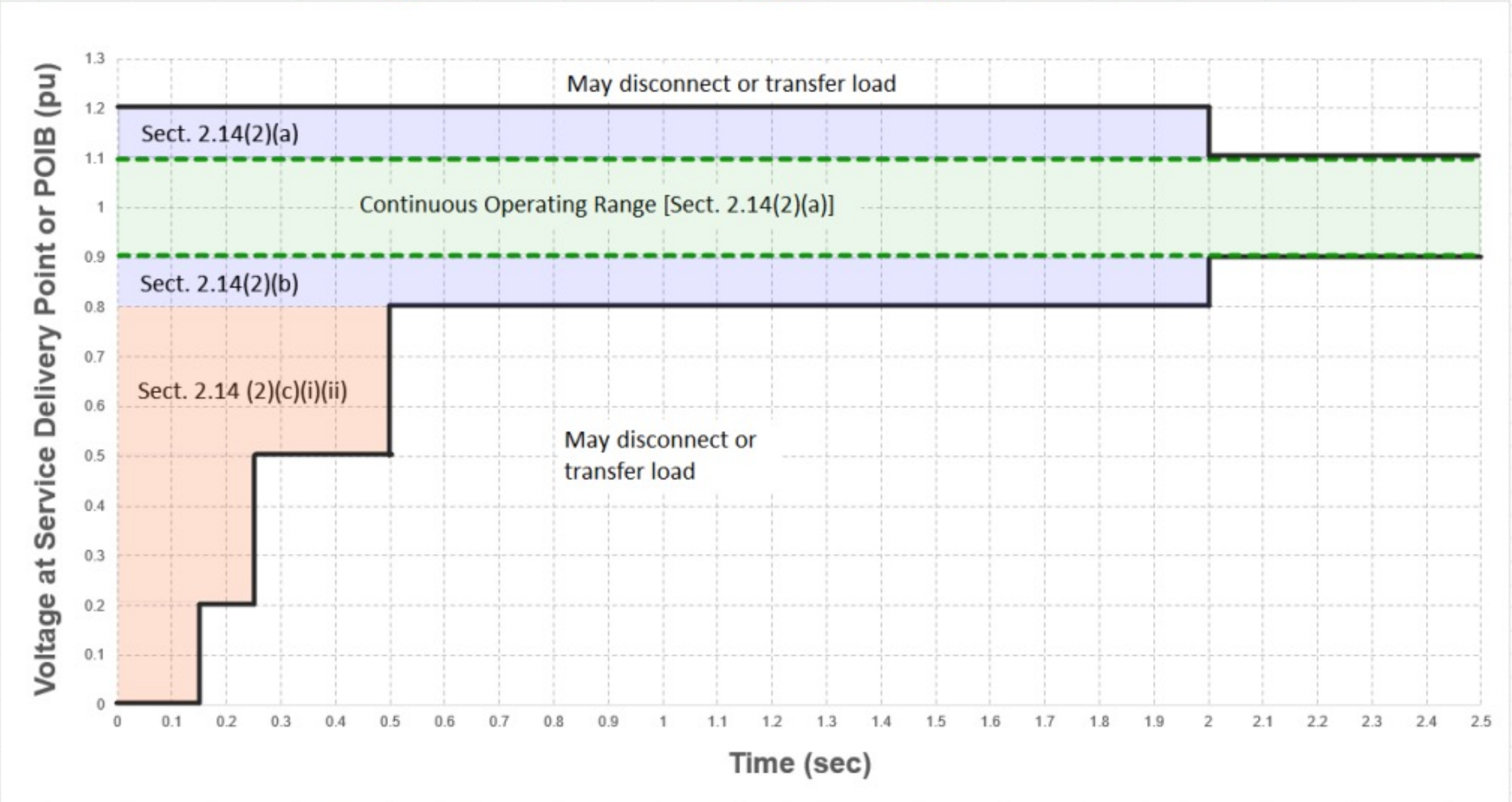


Megapack VRT solutions for large loads

ERCOT LLWG – 9/17/26

ERCOT VRT requirements

Section 2.14: Voltage Ride-Through Requirements for LELs



Note: Visual representation of Table A in Section 2.14(2) with reference to associated performance requirement section.



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Note: Acknowledge some of these ranges have changed in finalized NOGRR 282 from when slide published in February LLWG, including

- 1.2 – 1.1 PU reduction to 1s (from 2s shown)
- 0.35 is new notch vs 0.2 pu shown

ERCOT requirements

- **Continue consuming: 0.8 to 1.2 PU regions**
 - Most power supplies (PSUs) and uninterruptible power supplies (UPS) can meet
- **<0.8 PU**
 - Can reduce load, or transfer
 - Return to $\geq 90\%$ load in $<0.5s$ after voltage recovers to $90\%+$
- **Notes**
 - 150% overcurrent for $\leq 0.5s$
 - Desire for constant current behavior

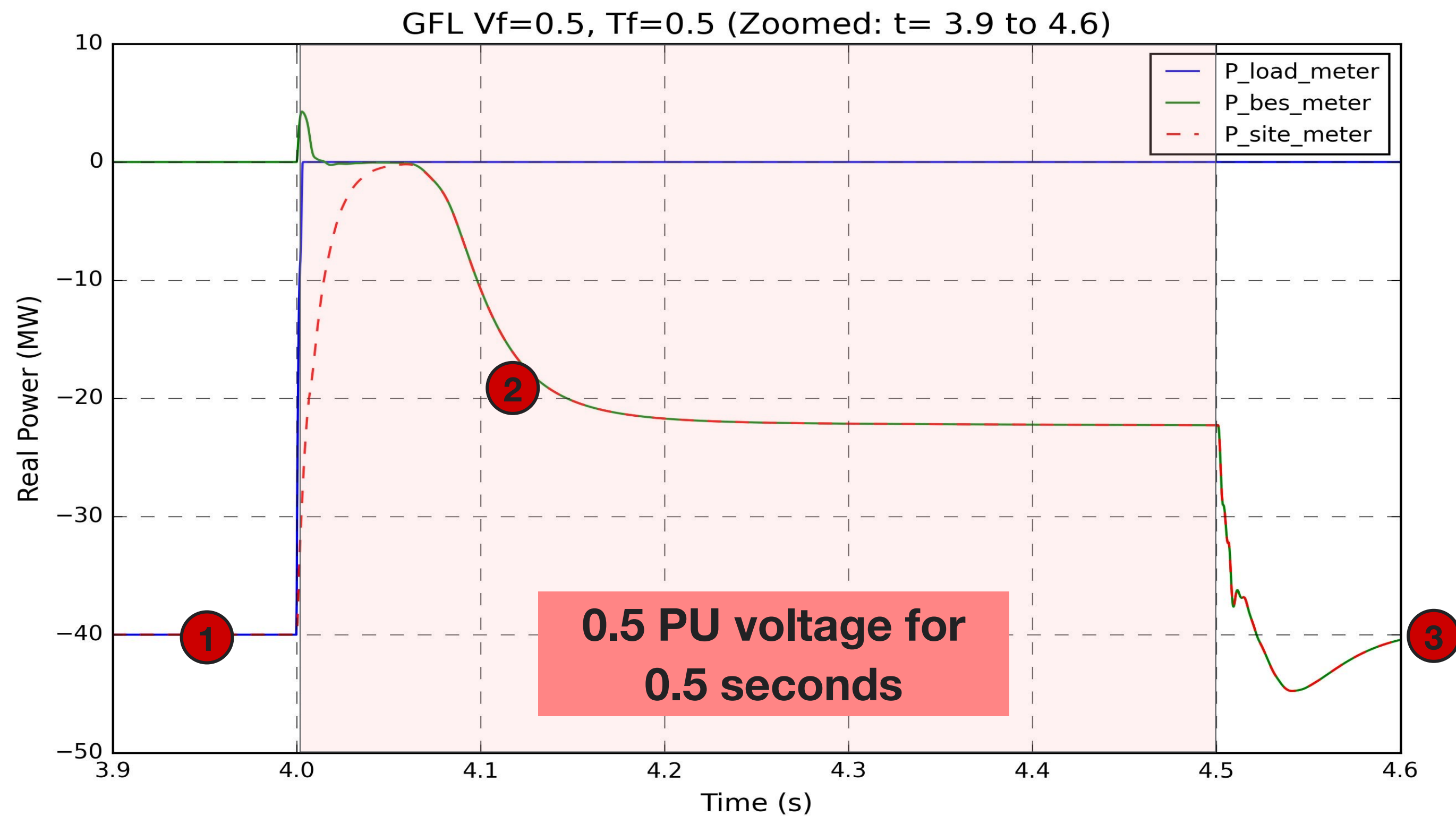
How to meet requirements

- Don't trip/reduce loads during all ranges of VRT curve
- Rapidly return load from material voltage dips (Orange section, <0.8 pu)

Megapack solutions

#1: Grid-following load mimicking

Load trips due to voltage dip, Megapack mimics load in <250 ms

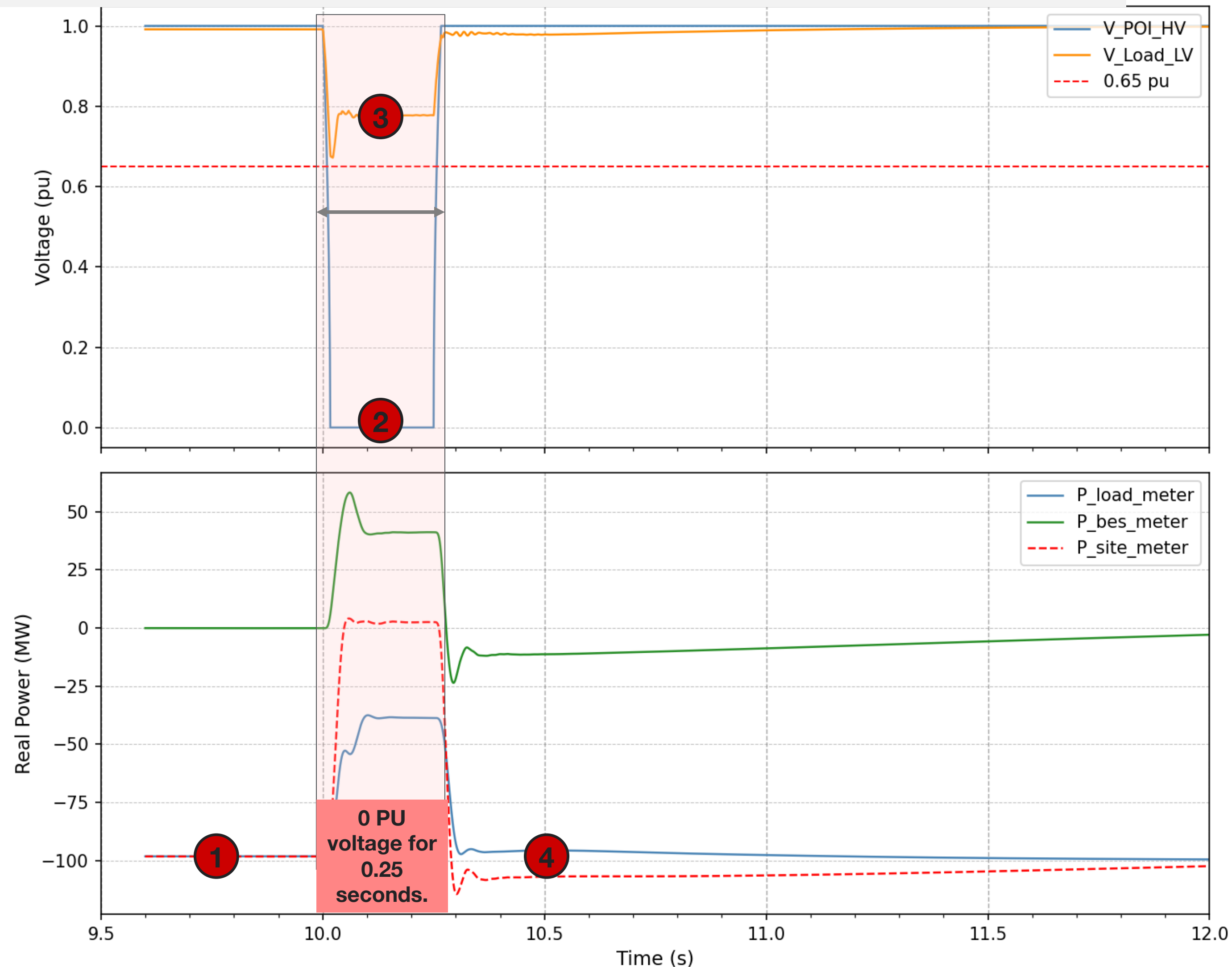


- 1 Prior to Fault:**
 - Load is fully supplied by the grid.
 - 2 During Fault:**
 - Load reduces as UPS provides power directly to loads (trips from grid).
 - The BESS draws ~50% of pre-fault power (proportional to the voltage drop).
 - 3 Post Fault:**
 - Real power to ERCOT system returns to pre-fault value within ~100 ms.
- ✓ Compliant ride through behavior
- ✓ Simple, turnkey compliance

Megapack solutions

#2: Grid-forming voltage support

GFM holds LV/MV voltage so PSUs see >0.65 pu.



1 Prior to Fault:

- Load is fully supplied by the grid.

• During Fault

- 2 Assumed bolted (0.0 pu voltage) fault at site ERCOT POI (HV side)

- 3 Grid-forming Megapack maintains voltage >0.65 pu at load LV bus during fault. Thus, loads do not trip

• Post Fault:

- Power draw to ERCOT system maintained (where voltage feasible)

- 4 Power normalizes almost immediately post fault

✓ **Compliant ride through behavior**

✓ **All loads stay online – No UPS needed**

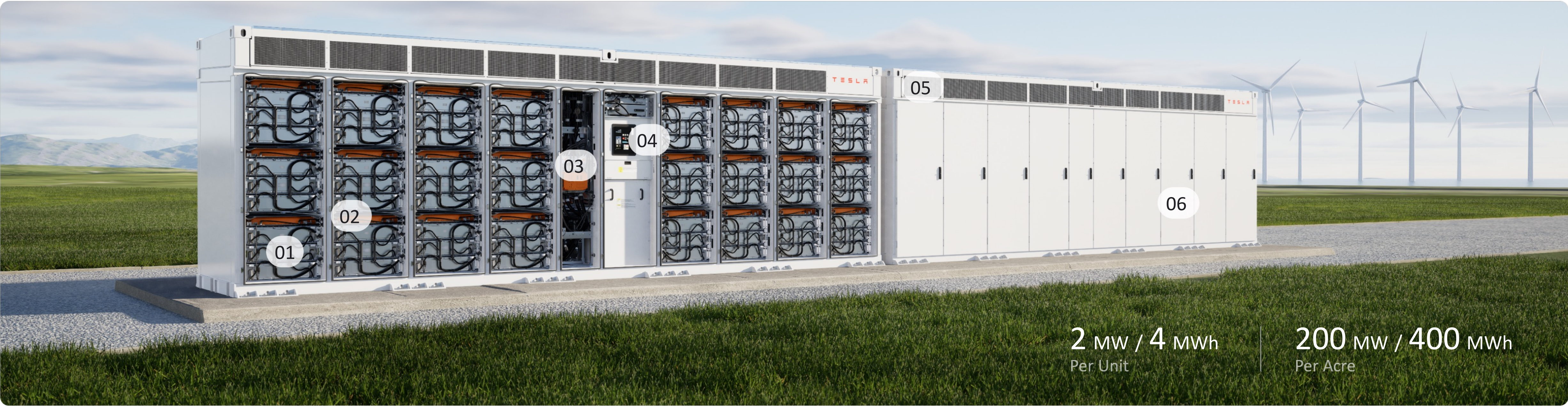
✓ **ERCOT system supported with added fault current**

Questions?

Please reach out to IndustrialContent@tesla.com with inquiries following today

Appendix

Megapack 2 XL overview



01	02	03	04	05	06
AC battery modules (x24)	Grid-tied inverter (x24)	Thermal cabinet	Customer interface (AC breaker)	Thermal roof	IP66 enclosure

Support data center operations by smoothing AI power load and accelerating speed to power

Meet grid code

Load smoothing with Megapack can reduce up to **99%+** of variability from AI workloads and support meeting voltage ride-through requirements

Get more power faster

Accelerate speed to power using load flexibility programs, while getting more servers online with the same utility feed with oversubscription

Includes availability guarantee up to 99.99%

Maximize uptime for uninterrupted data center operations

Megapack use cases at data centers



01



Power load smoothing & ramp rate control

Smooth AI training power demands and ramp rates to meet utility and generator requirements

02



Voltage ride through

Comply with utility requirements (ERCOT, EirGrid, FinGrid, AESO, etc.)

03



Flexible interconnection

Accelerate speed to power in partnership with utilities

04



Oversubscription

More servers, same utility

05



Backup power

Emissions-free backup power and UPS replacement capabilities

Technology Options

	Capabilities			Considerations		
	Load Stability & Ramp Rate Control	LVRT Requirements	Flexible grid connection	Cost	Right Sizable?	Added Energy Burn
2H BESS Megapack	Yes	Yes	Yes	\$300 / kW ¹	Yes	~0.5%
5 Min Battery UPS	Partially	Maybe	No	\$300 / kW	No	~5%
On-site generation Nat Gas	No	No	Yes	\$3000 / kW	Yes	
Capacitors E-Statcom	Partially	No	No	\$200–300 / kW	Yes	~0.5%
Dual Conversion BESS “MV UPS”	Likely	Likely	Likely	~\$500–\$700 / kW ²	No	~8%

1.

Includes 40–50% ITC credit

2.

Includes 30–40% ITC credit, uncertain if technology qualifies