9a – New Smyrna Beach UFLS Request

Executive Committee

January 18, 2024

FRCC Requires Entities to Submit UFLS Response Plan

Purpose/Function of UFLS Last Line of Defense for Grid

- New Smyrna Beach requests addition to the ARP & Lake Worth Beach UFLS aggregation annual response due to natural load growth
- Underfrequency load shedding is a critical backstop for a reliable electric system
- Automatic underfrequency load shedding programs provide:
  - Insurance that not all customers will be lost
  - Rapid restoration of service following an underfrequency event
  - Protection of customer and utility equipment from operation at excessively low frequencies for long durations
  - Sharing the pain amongst the interconnected “users” of the system

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UFLS Relaying, Settings and Program Requirements

Purpose/Function of UFLS Last Line of Defense For Grid

What happens when he stops peddling?

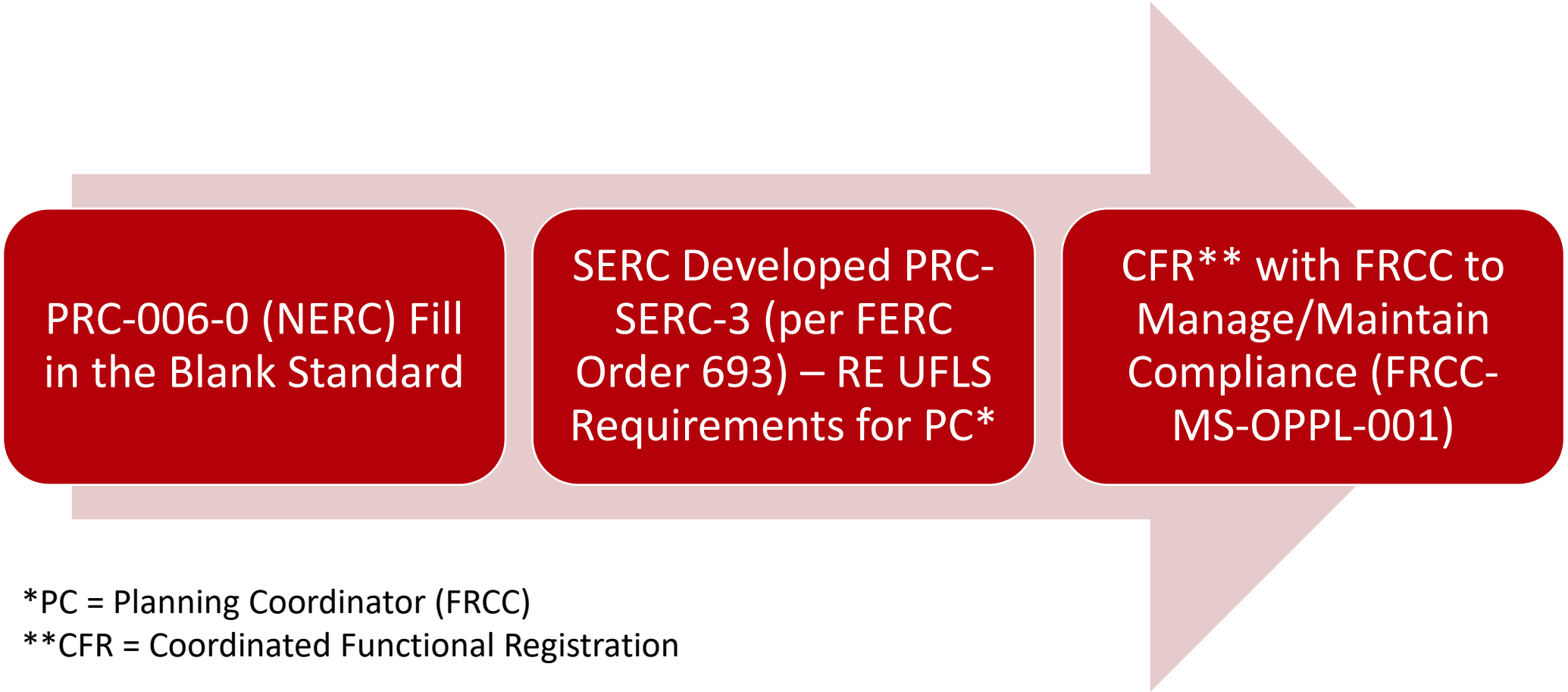
What happens if the road gets steeper?

What happens if the chain breaks?

Underfrequency Load Shedding Seeks to Restore Load – Generation Balance

PRC-006 Managed by FRCC, But Requires UFLS Data

UFLS Entities Can Aggregate if Desired But Must Meet The Ask



*PC = Planning Coordinator (FRCC)

**CFR = Coordinated Functional Registration

New Smyrna Beach – What is The Ask?

Investigate UFLS Entity Aggregation to Support Load Growth

- NSB expecting to be near threshold for requiring multi-step procedure, which is more challenging to comply with alone
  - Feeders are available to be shed per current step F1-a of FRCC requirements, but not divisible easily into higher threshold buckets for each step if peak were projected to grow to above 100 MW
- Reached out to FPL for aggregation, was told no
- Per FRCC procedure section 6.2.1.3, aggregation allowable w/o need for any governing CFR (see below)

> 6.2.1.3 FRCC UFLS Entities may aggregate UFLS assignments with other FRCC UFLS Entities. When multiple FRCC UFLS Entities are reporting their aggregate UFLS assignments, they must notify the FRCC SPCS and designate a responsible entity for reporting purposes. However, the compliance responsibility for reporting the data still lies with the FRCC UFLS Entity that owns the actual equipment.

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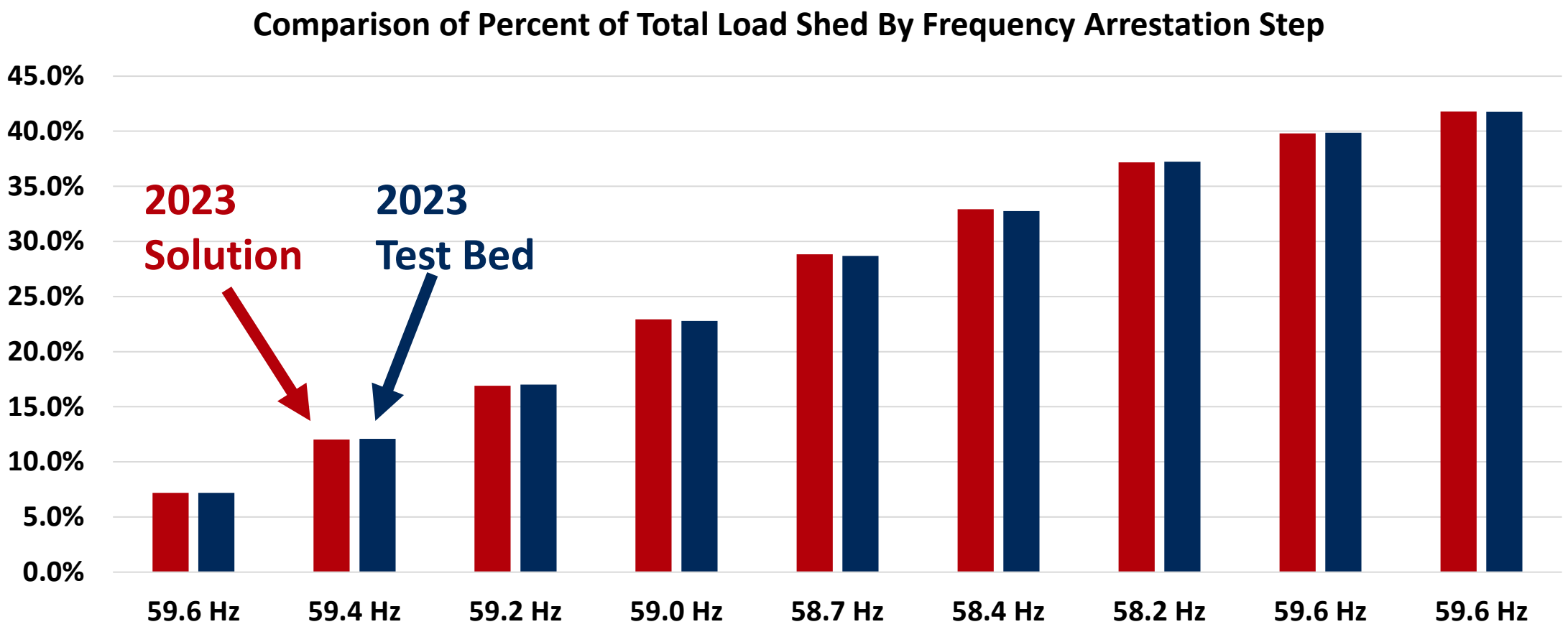
Test Bed From Last Year Shows No Impact To Others

New Smyrna Feeders Participate In Each Arrestation Step



Letter Agreement Contains Strong Protections

Designed to Hold Existing Cohort Harmless From Impacts

- Annual option to renew with mutual agreement among New Smyrna and existing cohort - not a CFR (redundant with FRCC function)
- Member remains fully responsible for relay settings as directed to support annual solution
- Any incremental cost associated with tethering to be borne by New Smyrna Beach
- 100% allocable fines/fees due to action (or inaction) by New Smyrna Beach
- Current level of effort < 80 hr. Member Service policy, but will be reviewed annually in light of overall compliance uncertainties, with New Smyrna Beach option to continue and be billed time above threshold annually

Appendix

Automatic Response Ask Differs for Entities >100 MW

Individual Entity Feeder Divisibility Key Threshold Challenge

IF >25 MW AND <=100 MW, single step structure with lower load shed "floor" of 35% of projected demand.

Table A2 FRCC UFLS Schedule for FRCC UFLS Entities with > 25 MW and ≤ 100 MW of Load

UFLS Step	Frequency Set-Points (hertz)	Total Operating Time[36] (seconds)	Acceptable Range for UFLS Load Assignment as % of Total UFLS Entity Peak System Load (%)
F-1a	59.5	<= 0.28	35 - 50

Table A1 – FRCC UFLS Schedule for FRCC UFLS Entities with > 100 MW of Load

UFLS Step	Frequency (hertz) Set-Points	Total Operating Time [32] (seconds)	Load as % of Total UFLS Entity Peak System Load [33] (%)	Total Cumulative Amount of Load as % of Total UFLS Entity Peak System Load [34] (%)	Acceptable Range for UFLS Load Assignment as % of Total UFLS Entity Peak System Load (%)
F-1	59.6	<= 0.28	7	7	6 – 9
F-2	59.4	<= 0.28	5	12	11 – 14
F-3	59.2	<= 0.28	5	17	16 – 19
F-4	59.0	<= 0.28	5	22	21 – 25
F-5	58.7	<= 0.28	6	28	27 – 31
F-6	58.4	<= 0.28	4	32	31 – 35
F-7	58.2	<= 0.28	4	36	35 – 39
F-8	59.6	15.0 ± 0.5	2	38	37 – 41
F-9	59.6	22.0 ± 0.5	2	40	40 - 44

IF >100 MW, multi-step structure with higher load shed "floor" of 40% of projected demand & more granular acceptable ranges. FMPA has developed a model that "solves" for shed sequence that aligns with FRCC schedule.

Test Bed From Last Year Shows No Impact to Others

Slightly Higher Overall Shedding Within FRCC Boundaries

- NSB was re-engaged to fully understand the request and has provided both legacy (pre 2017*) and new (current approach) feeder information that was used to “test bed” a tethered solution using the 2023 data that FMPA otherwise submitted
  - Can include previously included Smy1* sub with 3 feeders that could participate as required
  - FMPA currently Includes ARP + LWB in UFLS aggregation annual response
  - NSB willing to adjust frequency set points if directed, can perform work internally
- Risks include (i) more challenging “solved” solution, (ii) potential adjustments to frequency set-points for existing cohort to map to FRCC acceptable ranges, and (iii) associated cross-subsidization of the overall requirement – no such risks evident in test bed, but protections in letter

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*Legacy approach included one additional substation with higher overall shed capability for NSB.