



---

# 10 Seconds Support Test

ERCOT Re-Think AS Team

ERCOT FAST Work Session

April 18, 2014



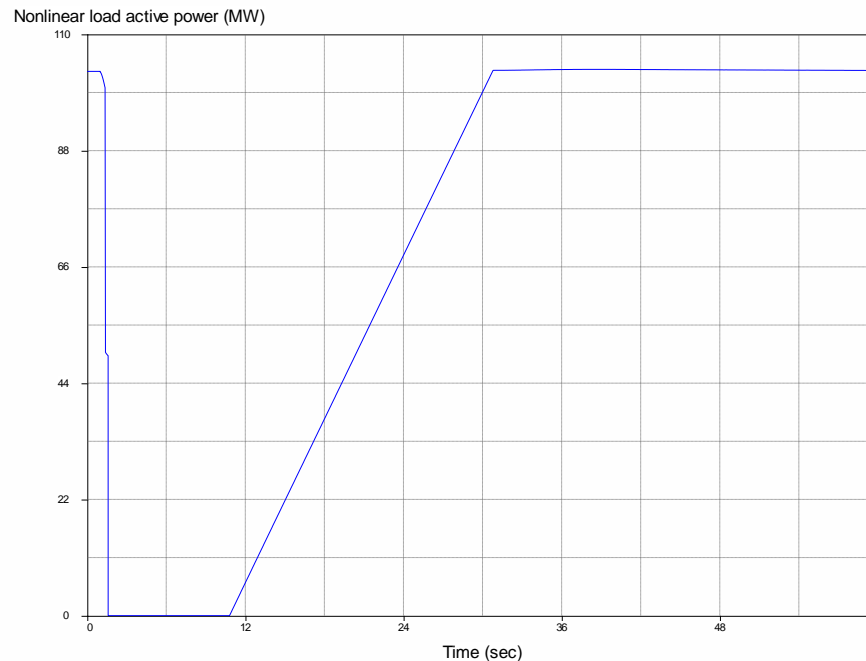
# A 10 Seconds Support test

---

- A proposal to have a 10 seconds service was discussed in the FAST work sessions.
- ERCOT developed a model to simulate the 10 seconds support and its impact to the grid.

# 10 Seconds Support

- Performance
  - Deploy 50% within 5 cycles when Freq  $\leq$  59.9 Hz
  - Deploy 100% within 5 cycles when Freq  $\leq$  59.8 Hz
  - Proportional recover within 20 seconds after a 10 seconds deployment
- Example: a 100 MW load to provide the 10 seconds service



# Selected Study Cases

Case	Date/Time	Load (MW)	Wind Output (MW)	PRC* (MW)	Wind Penetration**	Net Load (MW)	System Inertia*** (GW-Second)
1	08072013 17:00	67,148	2,398	4,105	3.57%	64,750	372
2	02132014 19:00	36,460	1,188	5,062	3.26%	35,272	236
3	01132014 03:00	24,857	7,196	5,812	28.95%	17,661	174

\*PRC: Physical Reserve Capacity

\*\*Wind Penetration = Wind output / Load

\*\*\*System Inertia (GW-second) = Sum of (Machine MVA \* H) / 1000



# 10 Seconds Support Test

Bus frequency (Hz)

