Plant retirement planning solutions: Demand flexibility

Debbie Lew, ESIG

Spring Technical Workshop

ESIG
ENERGY SYSTEMS INTEGRATION GROUP

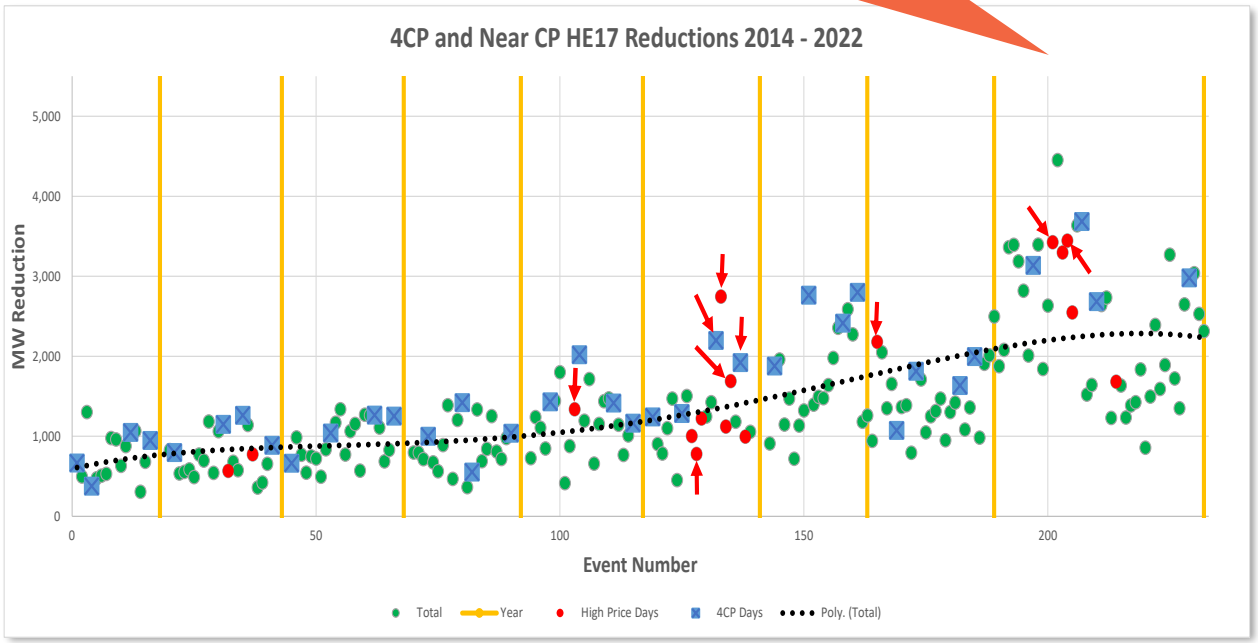
Mar 27, 2024

We have resource adequacy because load is not sensitive to price and utilities have an “obligation to serve”

Myth: Customers don't respond to prices

- One of the biggest examples of voluntary demand-flexibility is what customers do to avoid 4CP (4 critical peak) transmission charges
- The price signal needs to be big enough to make a difference.
  - Or it can be small if automation can manage the arbitrage.
- It is likely that significant load would ramp down during stress events if it were compensated anywhere near the value of lost load (~$25,000/MWH)
- The question is how much variability in prices society is willing to accept.
  - In Southern Company, customers consume off a baseline and are exposed to prices on the margin.

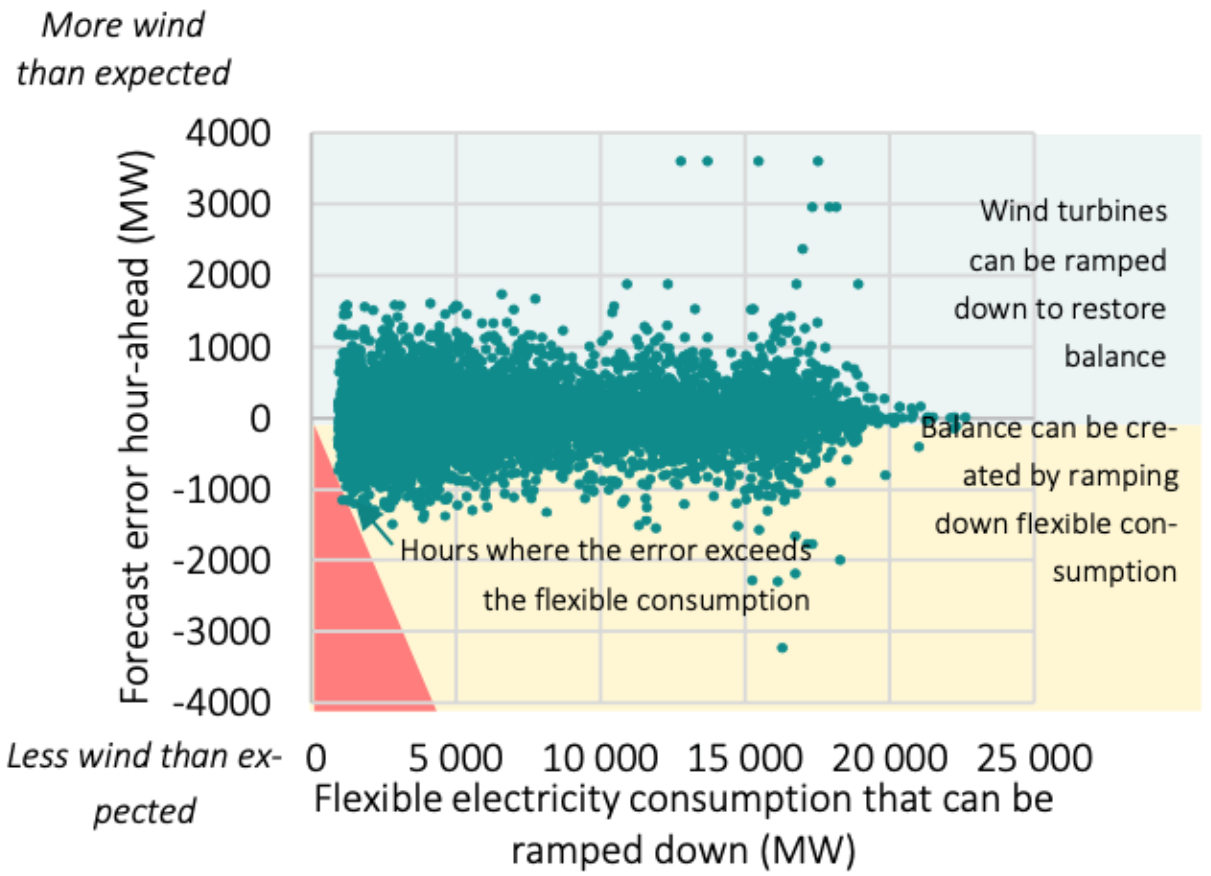
ERCOT can see 3000-4500 MW of voluntary demand reduction due to their 4CP transmission charge

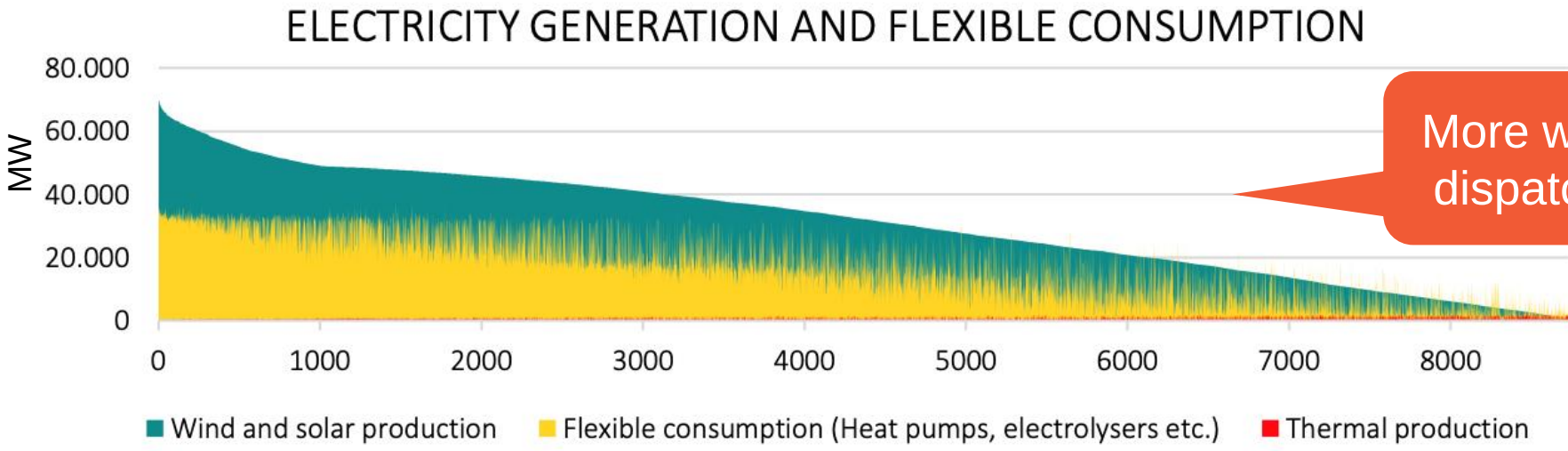


Source: ERCOT, 2023

Use demand-side flexibility instead of reserve capacity

This means fuller use of grid capacity, rather than having to hold back some capacity as reserves



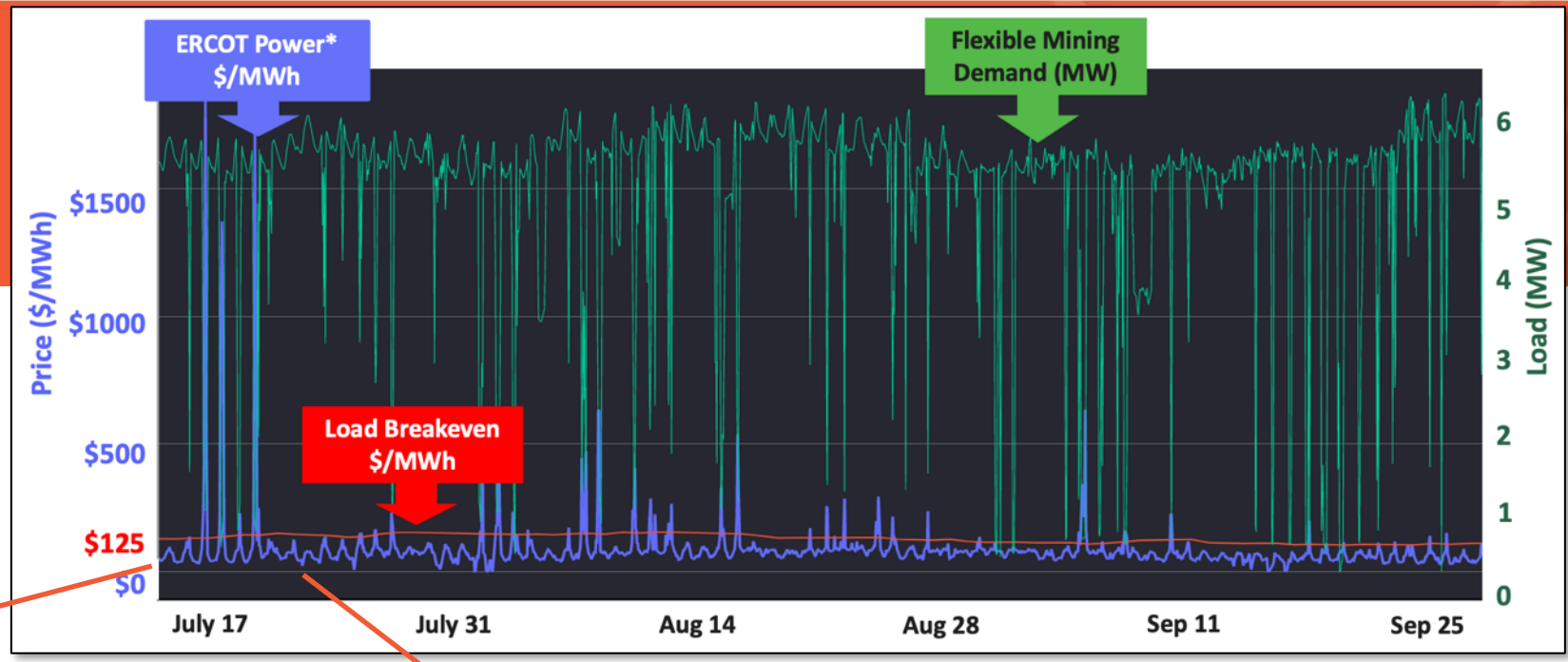


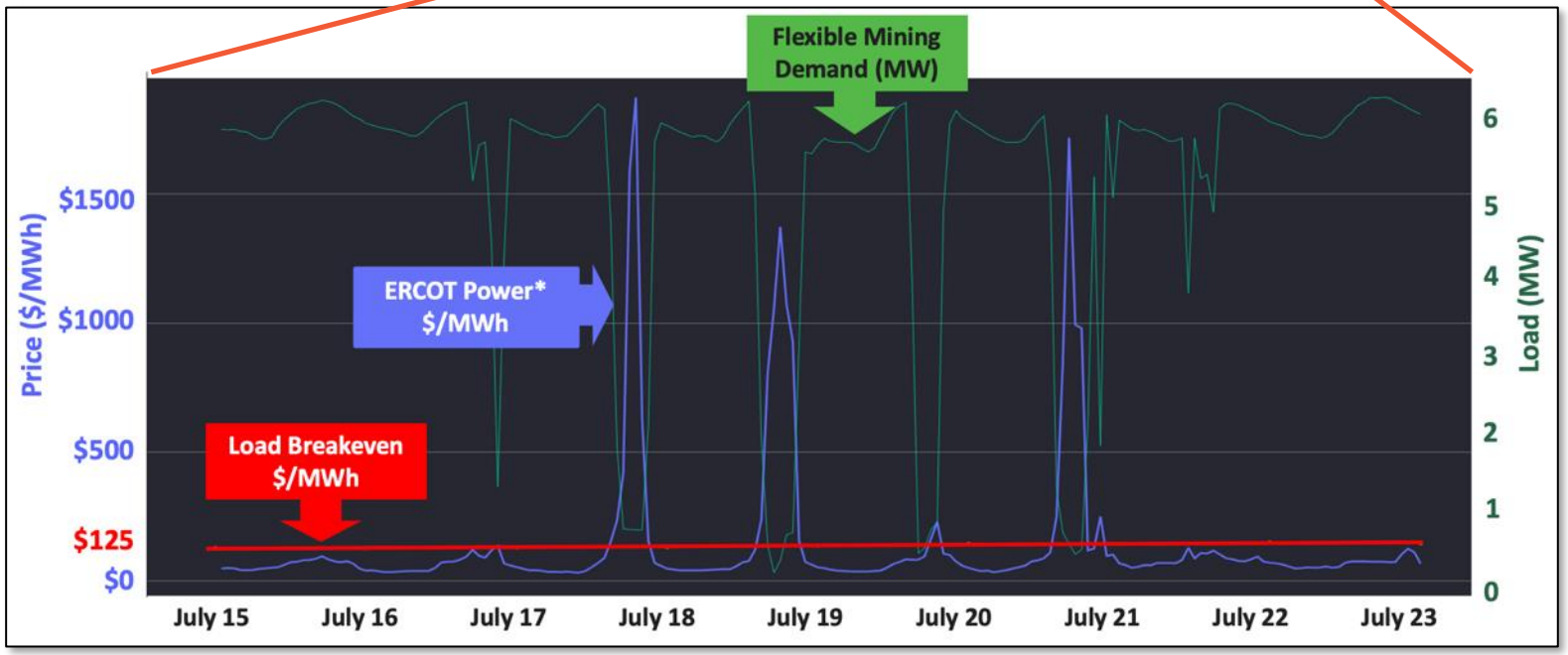
More wind variability but more dispatchable demand to help

https://energinet.dk/media/y5rhoqjy/pathways-towards-a-robust-future-energy-system_energinet-2023-01-23.pdf

Dispatching Demand

Controllable Load Resources in ERCOT can participate in the DAM and RTM and even set the price





These loads are dispatched to 5 min set points and provide frequency response

Shaun Connell, Lancium, 2023

The best way to meet demand
when supply is short
is to have less demand