

Demand Side Response



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Agenda

- Demand side history in National Grid leading up to today
- The role of demand side in a changing world

Demand side history leading up to today



Frequency Control Services

Frequency Control by Demand Management (FCDM)

- Comprises a number of sites (min size 3MW)
- ~150MW currently contracted (static @ 49.7hz)
- Delivers a service of ~50MW

Bilateral Contracts

- Aluminium plants

Reserve Services

Short Term Operating Reserve (STOR)

- Blocks of 3MW minimum
- Typically 2.3GW procured of which ~30% non-BM and of that ~200MW demand response

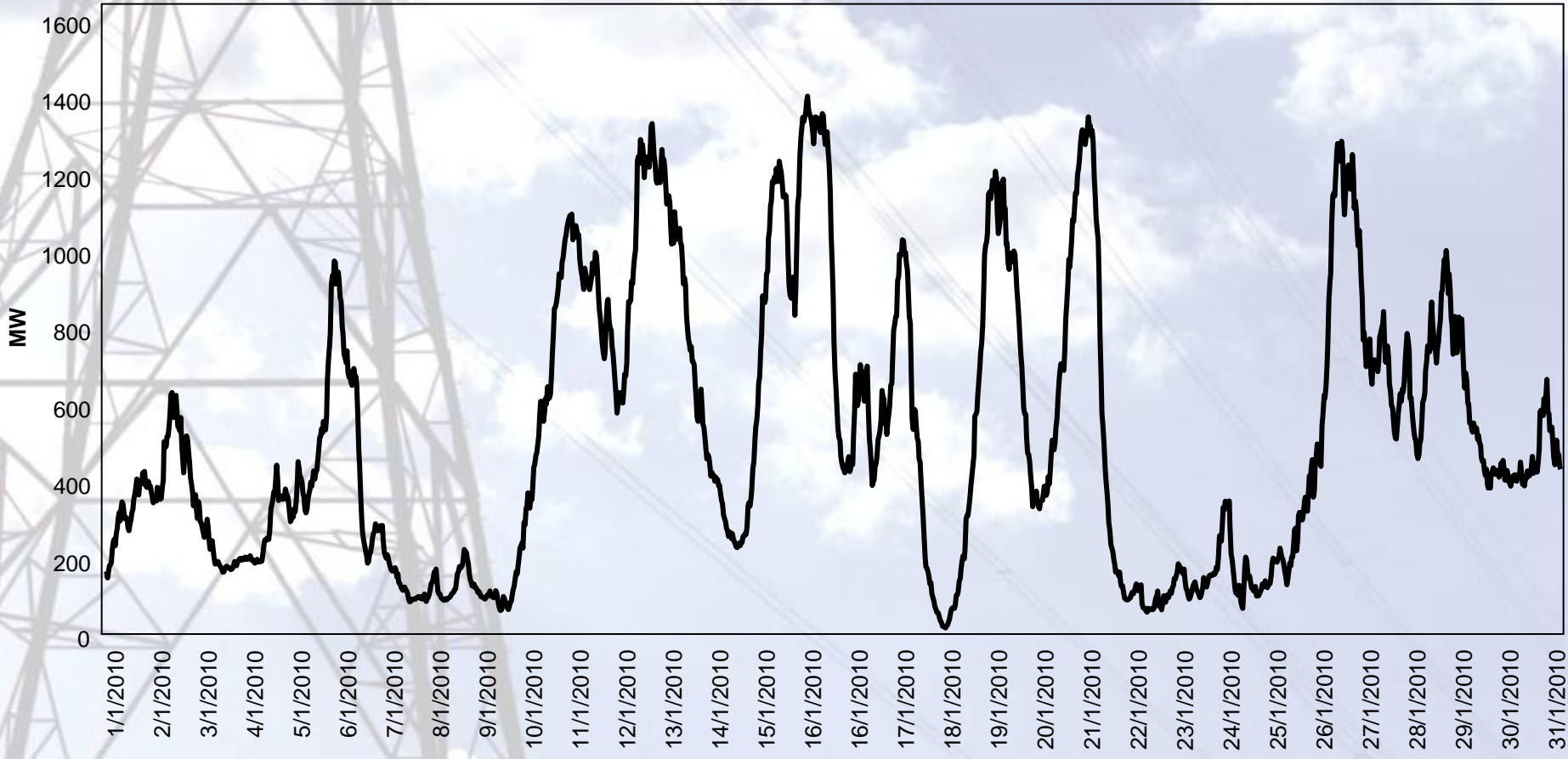
Fast Reserve

- 50MW blocks (in aggregate) delivered within 2 minutes, ramp rate of at least 25MW/min
- Demand side delivers through tele-switching of Economy 7 loads of ~250MW

Demand Side in a Changing World



Wind output January 2010



Operating the system in 2020

Variable generation

A line graph showing Frequency F (%) on the y-axis and MW on the x-axis. The curve rises to a peak and then falls. Red square markers are placed along the curve. To the right is an image of a wind turbine.

Inflexible generation

A line graph showing Frequency (Hz) on the y-axis (ranging from 49.8 to 50.2) and Time (minutes) on the x-axis (ranging from 0 to 60). The frequency fluctuates slightly around a mean of 50.0 Hz. A radiation symbol is shown to the right.

Large generation

A line graph showing Frequency (Hz) on the y-axis and Time (minutes) on the x-axis. The frequency drops sharply from 50.0 Hz to approximately 49.5 Hz and then recovers. A nuclear power plant image is shown to the right.

Active Distribution Networks

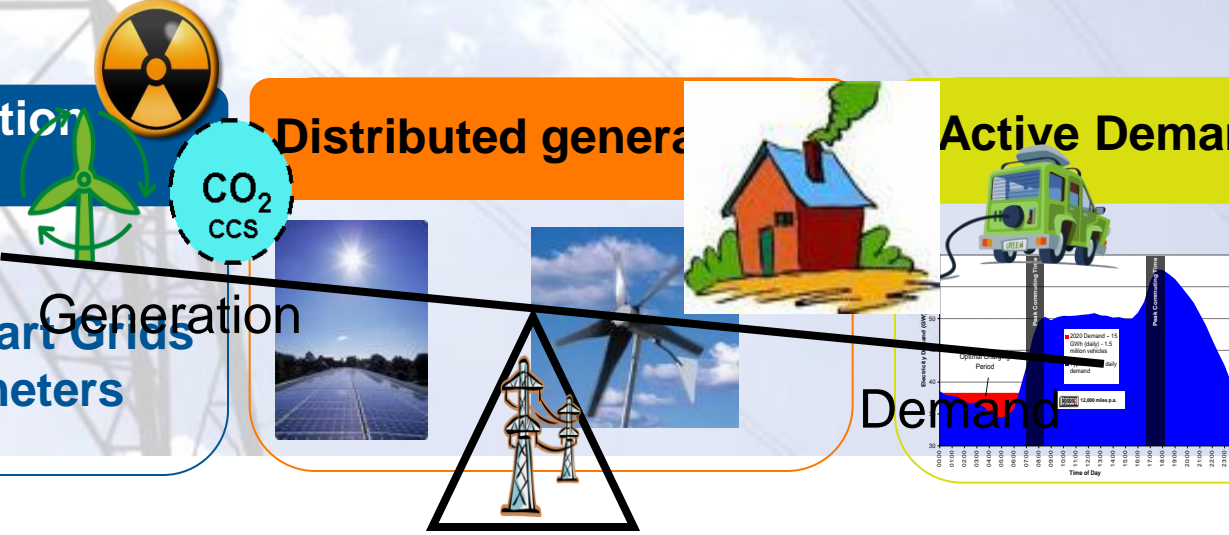
An image of a smart grid with houses and meters. A radiation symbol and a CO₂ CCS icon are overlaid on the image.

Distributed generation

An image showing solar panels and a wind turbine. A radiation symbol is overlaid on the image.

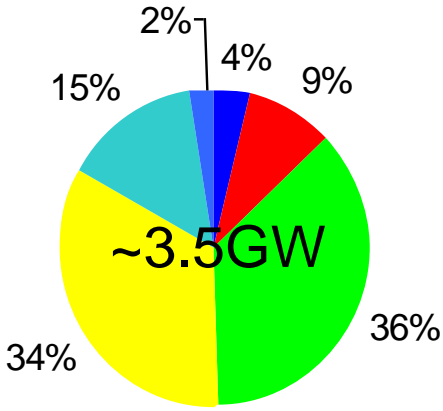
Active Demand

An image of an electric car at a charging station. Below it is a graph showing Demand (MW) on the y-axis and Time of Day on the x-axis. The graph shows a peak in demand during the day.

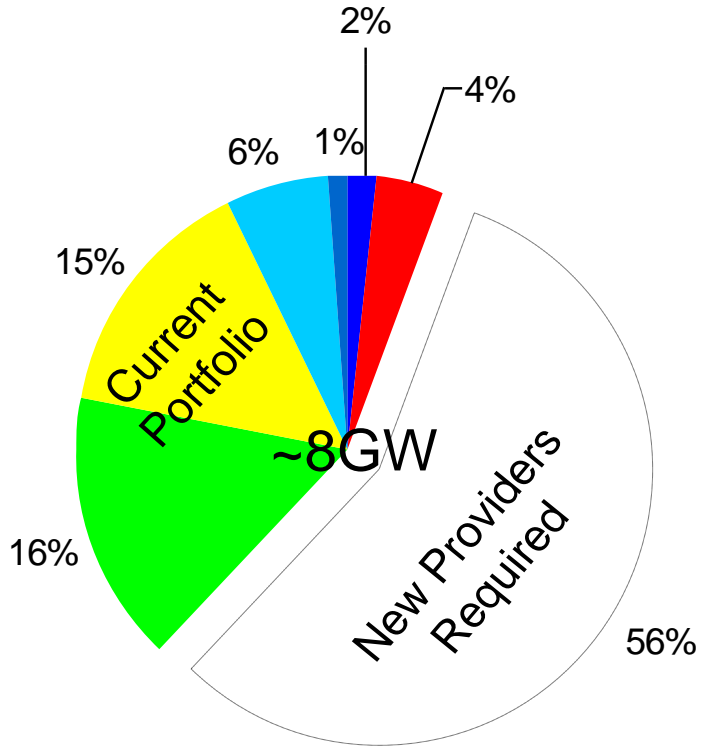


Balancing Services Opportunities

Typical Current Winter Reserve Provider Breakdown



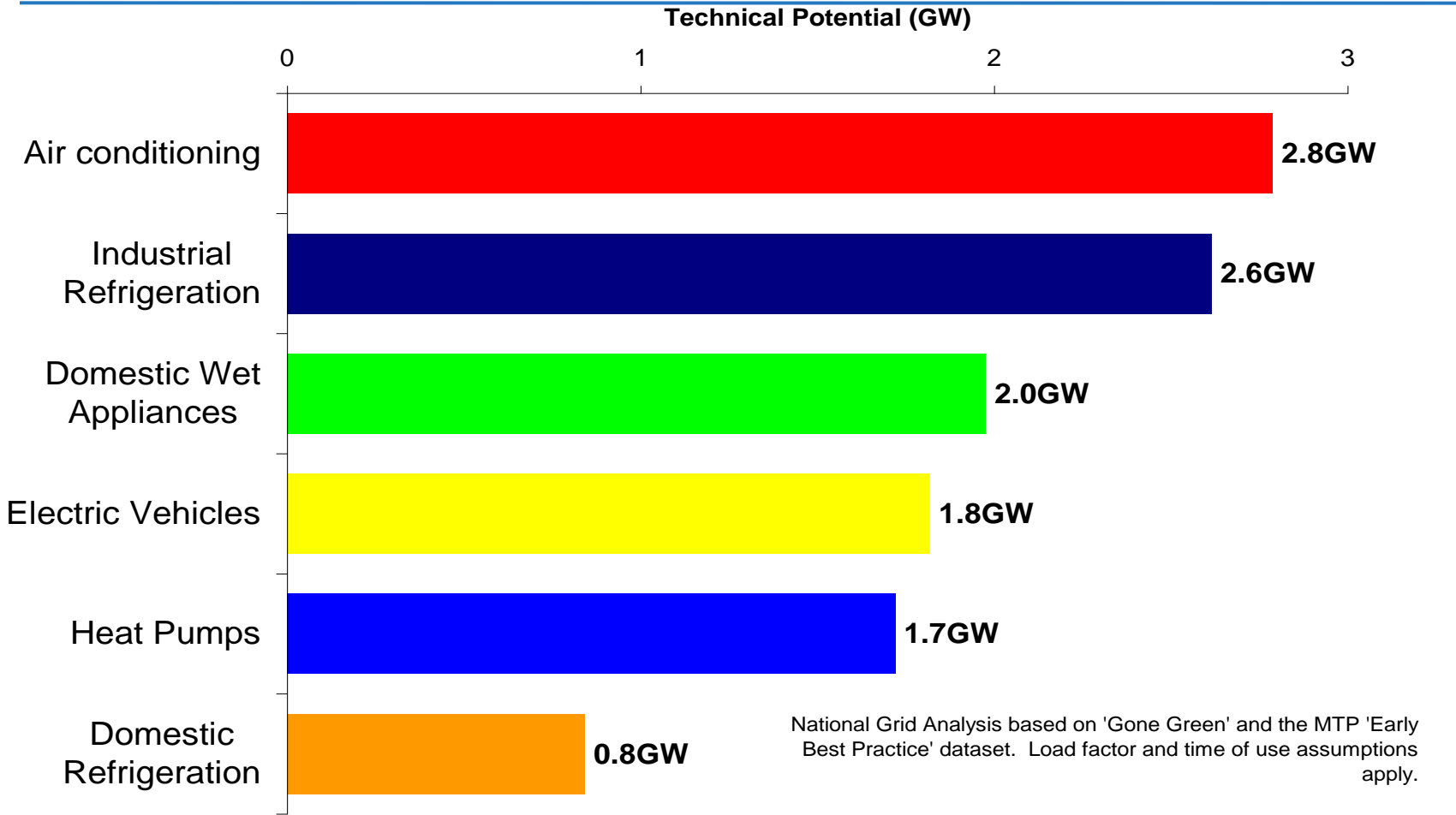
Potential Opportunity for New Reserve Providers in 2020



- Small Demand sites
- Large Demand sites
- BM STOR
- Non-BM STOR
- Pumped Storage
- Interconnectors

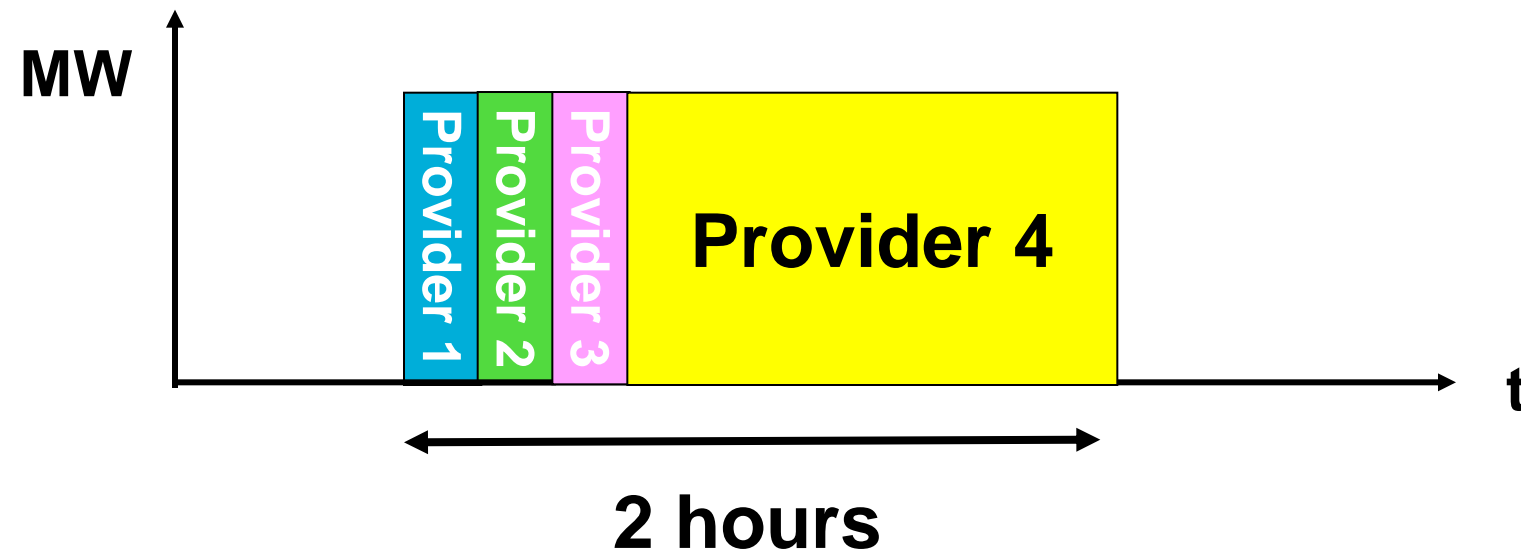


Meeting part of that gap

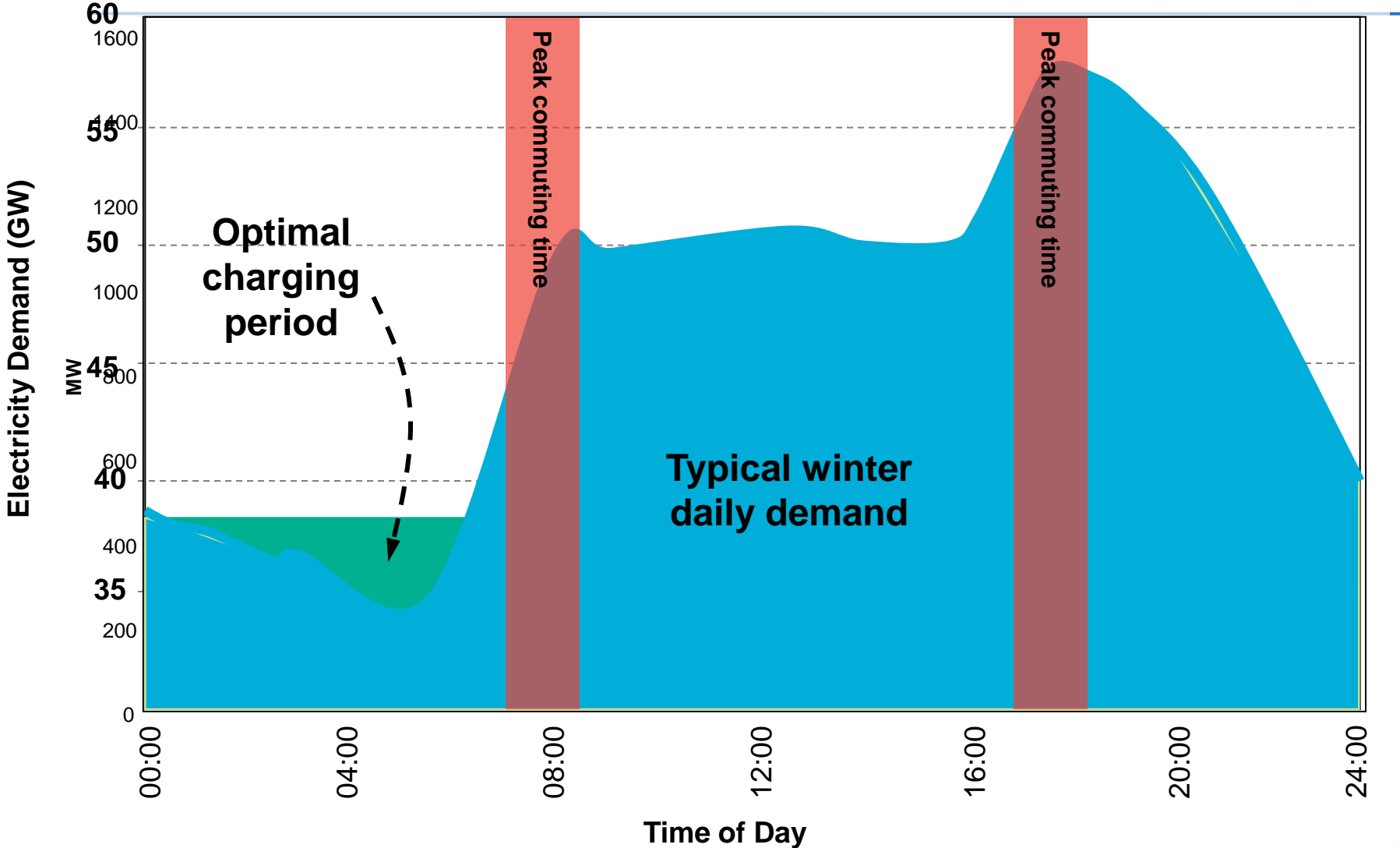


National Grid's Reserve Review

- National Grid is embarking on a review of its balancing services and is working with the industry to formulate changes for the longer term
- Disaggregation of service provision is one idea being discussed



Smart Demand...



Questions

