

Analysis of response to Individual Reserve Capacity Requirement (IRCR) in 2020-21 Hot Season

A 2021 WEM ESOO supplementary analysis

Presented to WA Electricity Consultative Forum
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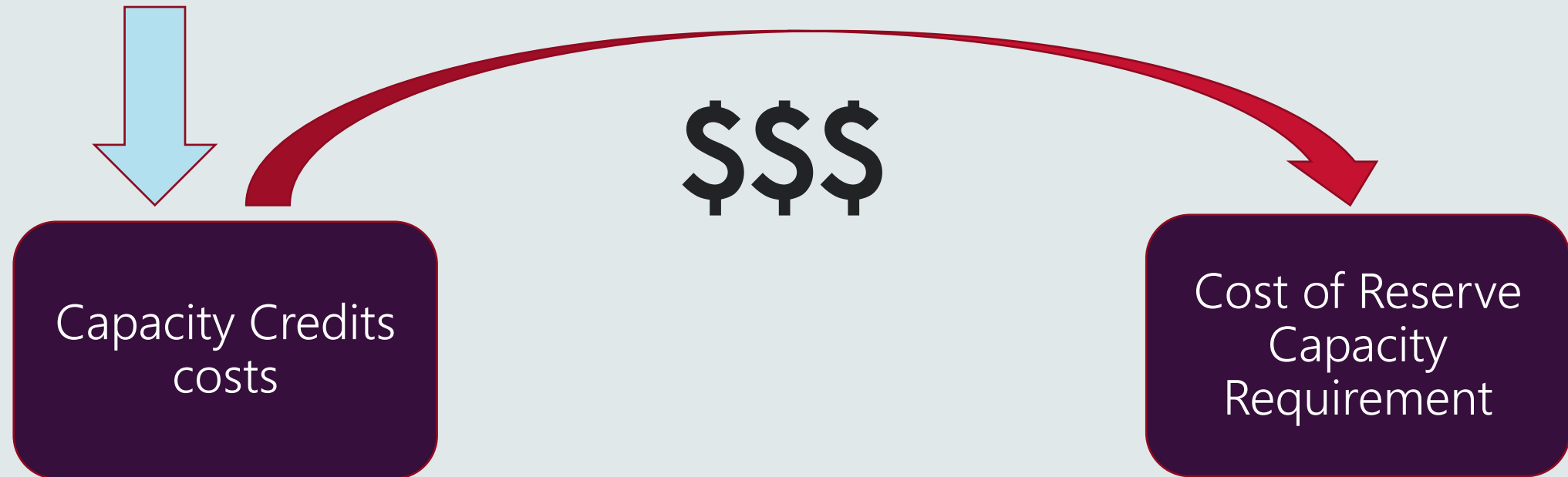
Agenda

1. What is the IRCR?
2. IRCR Response Analysis
3. Predicting the 12 Peak SWIS Trading Intervals (IRCR Trading Intervals)
4. Summary
5. Questions and feedback

What is the IRCR?

IRCR (in MW)

- allocated to every Market Customer¹ and Customer²
- calculated based on their consumption during IRCR Trading Intervals from previous Hot Season



1. A Rule Participant who is registered as a Market Customer under clauses 2.28.10, 2.28.11 or 2.28.13 of the Wholesale Electricity Market Rules (WEM Rules). A Market Customer represents a person who sells or intends to sell electricity to Customers.

2. A person to whom electricity is sold for the purpose of consumption.

IRCR Response

Background

- Investigation Period: **2012-13 to 2019-20 Hot Seasons.**
- Sample of **top 500 National Metering Identifiers (NMIs) with the highest consumption** in the relevant Hot Season
- Criteria for determining whether a NMI has responded during an IRCR Trading Intervals:

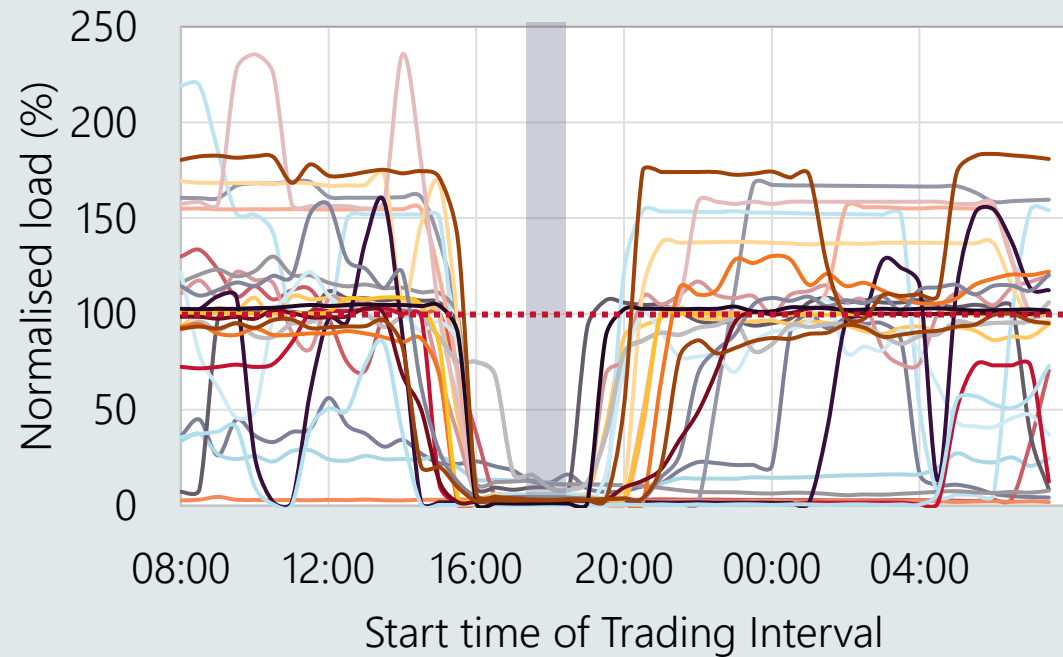
Consumption < Target Consumption Level

- Evaluation:
 - Estimated total reduction in NMIs' consumption due to their consumption deviating from the baseline consumption (**IRCR reduction**),
 - **Number/percentage of NMIs which responded** to reduce consumption, and
 - **Average percentage reduction** among NMIs that responded in the IRCR Trading Interval

2020-21 Summer Peak Demand

Date	8 Jan 2021
Peak demand (MW)	3,789
Trading Interval of peak demand	18:00-18:30
IRCR reduction (MW)	146
Estimated number of NMs responded out of the sample	42 (8%)

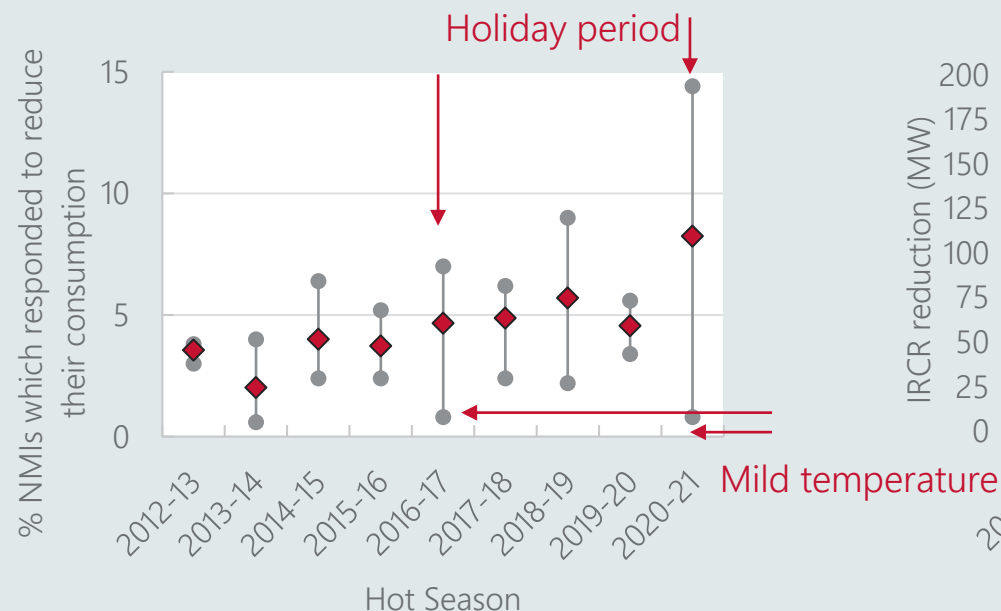
Intraday normalised load³ for NMs that responded at least 9 of 12 Trading Intervals on 8 Jan 2021



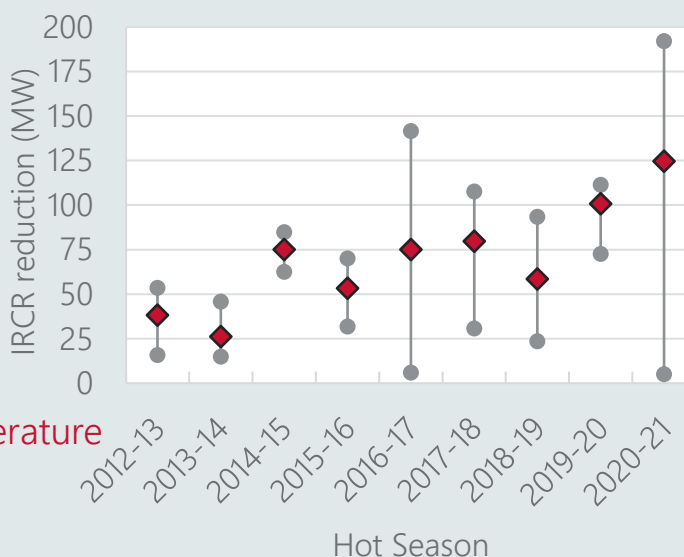
3. Normalised load is calculated as the ratio of the consumption to baseline consumption

Analysis of Response to IRCR for 2012-13 to 2020-21 Hot Season

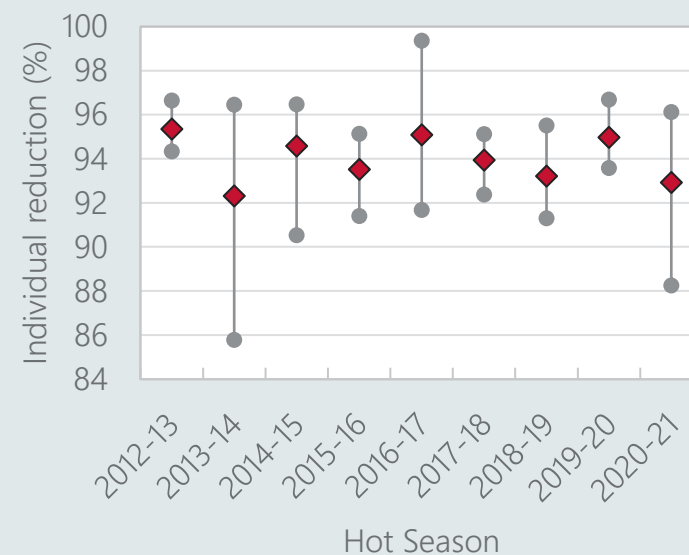
IRCR Reduction



Percentage of NMI's that responded to reduce consumption



Average percentage reduction among NMI's that responded

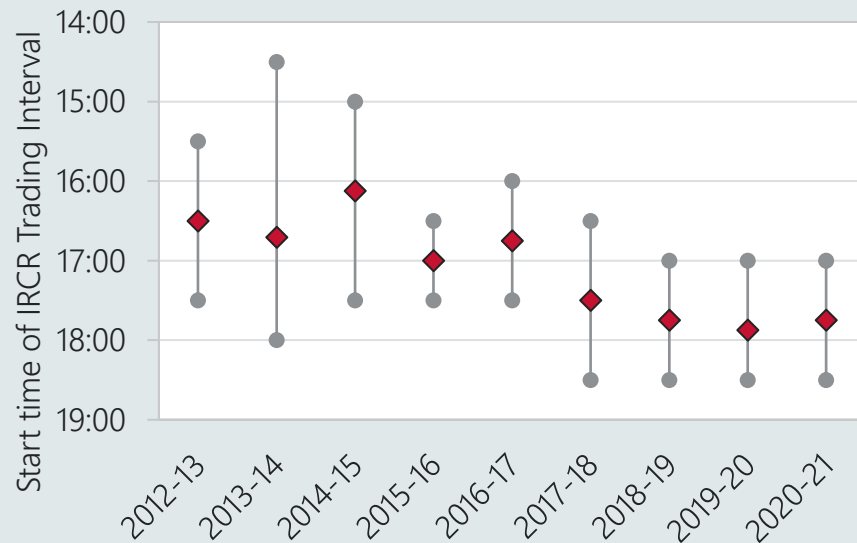


The average (red dot) and the maximum and minimum (grey dots) are taken among the IRCR Trading Intervals for each Hot Season.

Predicting IRCR Trading Intervals

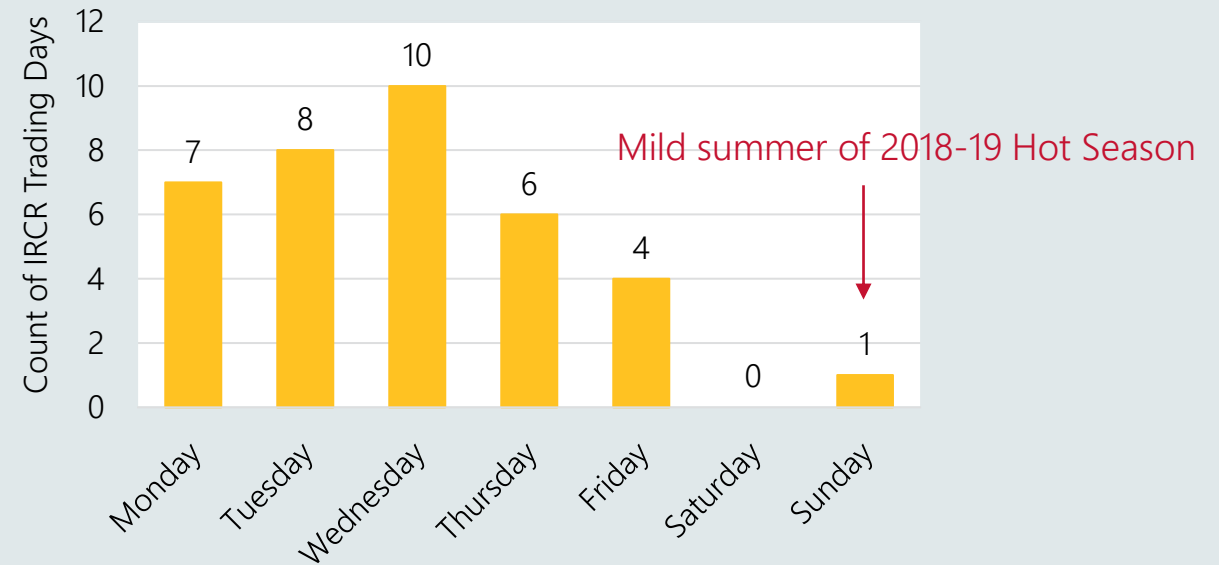
Predicting IRCR Trading Intervals

Time of the day



Hot Season

Day of the week

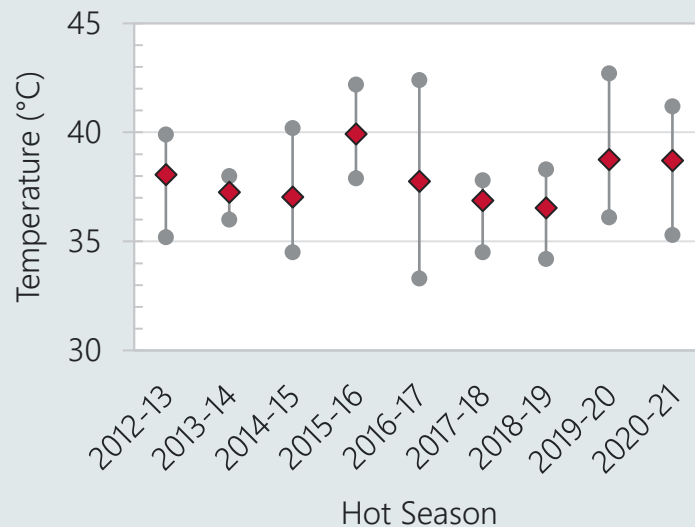


Day of the week

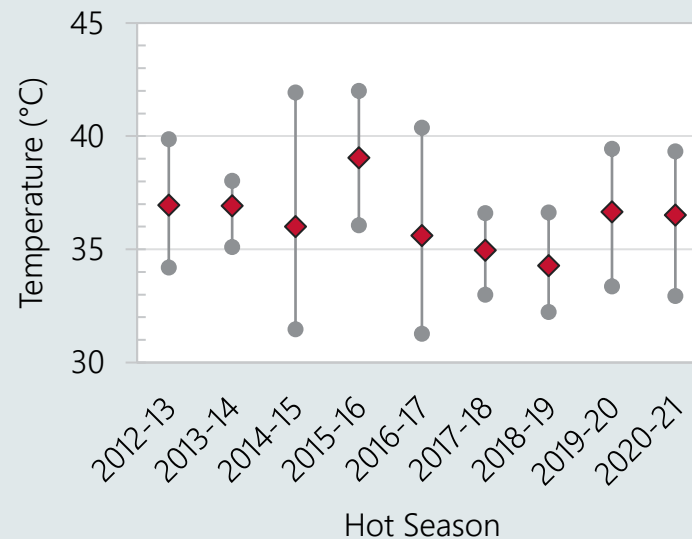
Predicting IRCR Trading Intervals

Temperature

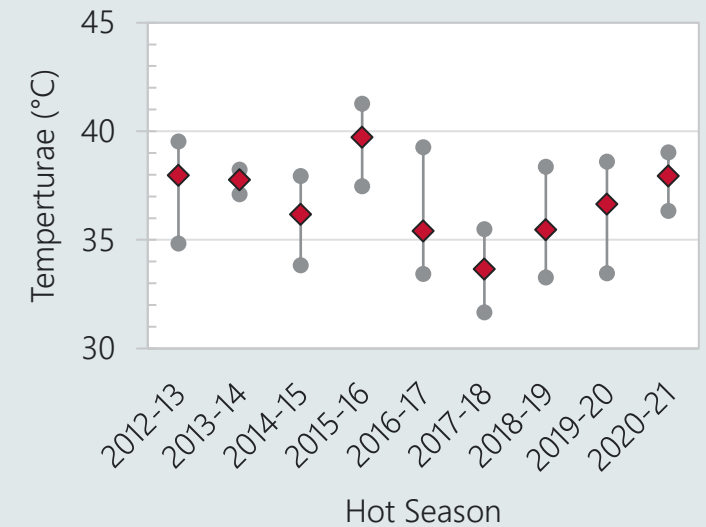
At 15:00pm



90-min rolling average

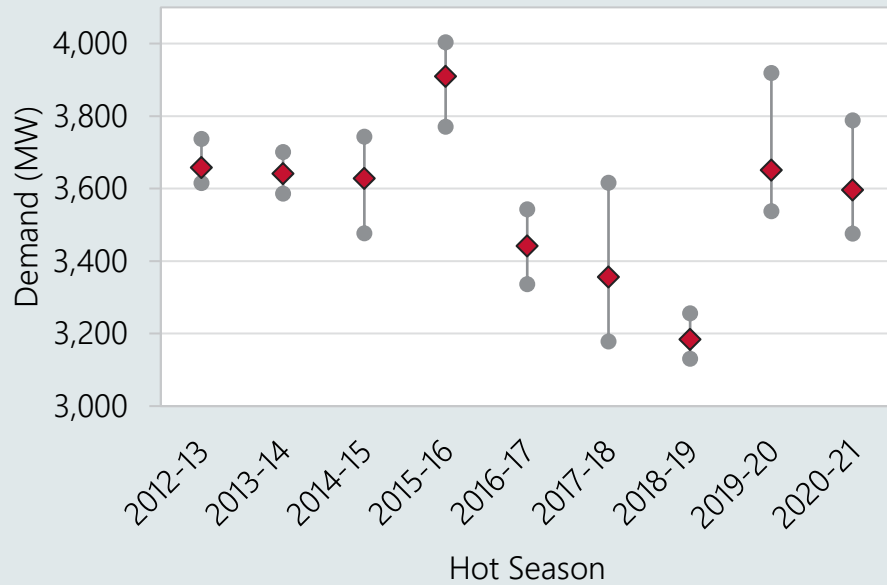


3-day rolling average

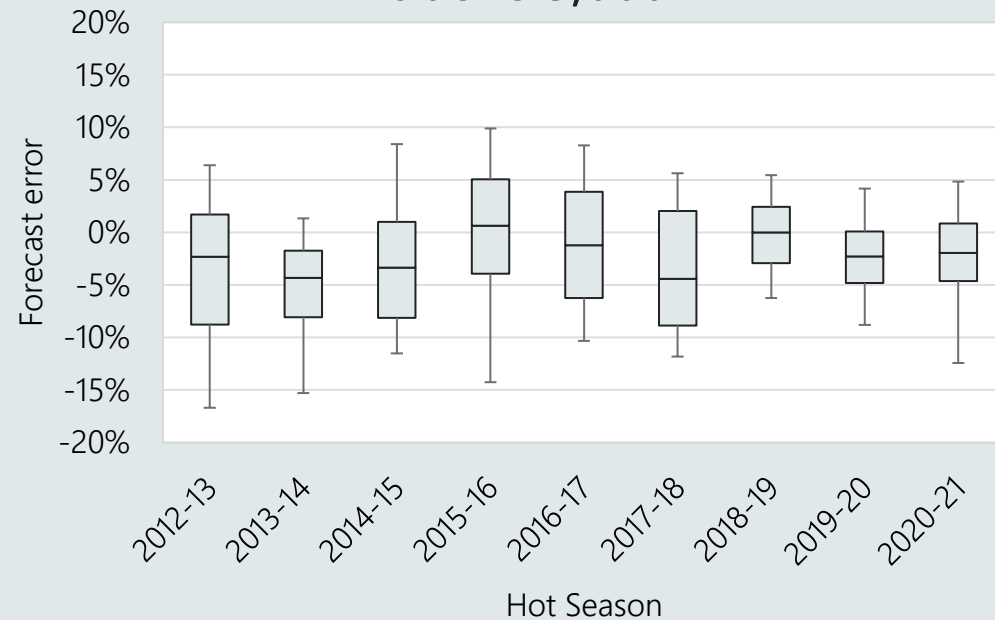


Predicting IRCR Trading Intervals

Historical demand



Box plot of the estimated forecast error for actual load above 3,000 MW



Load Forecasts are published by AEMO in accordance with clause 7.2.1 of the WEM Rules. This is based on total market load, which is measured using SCADA data on a 'sent-out' basis and adjusted for network losses. This is not the same as TSOG, which is non-loss adjusted meter data.

Summary

- Long-term growth in IRCR reduction indicates the IRCR mechanism increasingly incentivises Customers to reduce consumption during high demand periods
- Analysis of historical data supports that Customers may predict the IRCR Trading Intervals using several main factors including time of day, day of the week, temperature, and load forecasts

2021 IRCR Supplementary Analysis report to be published on Monday, 16 August

Reserve Capacity

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Questions and Feedback