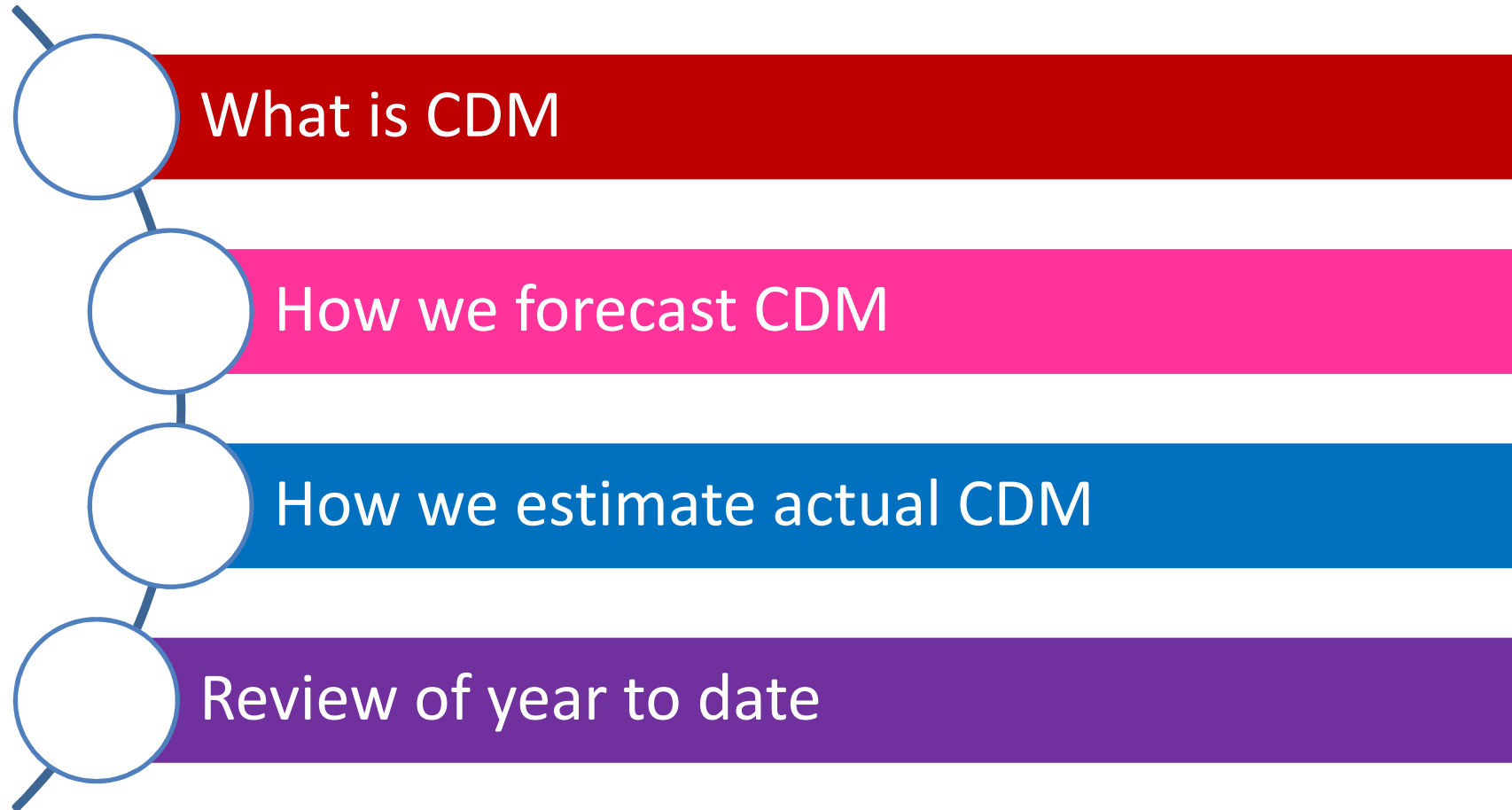


Customer Demand Management

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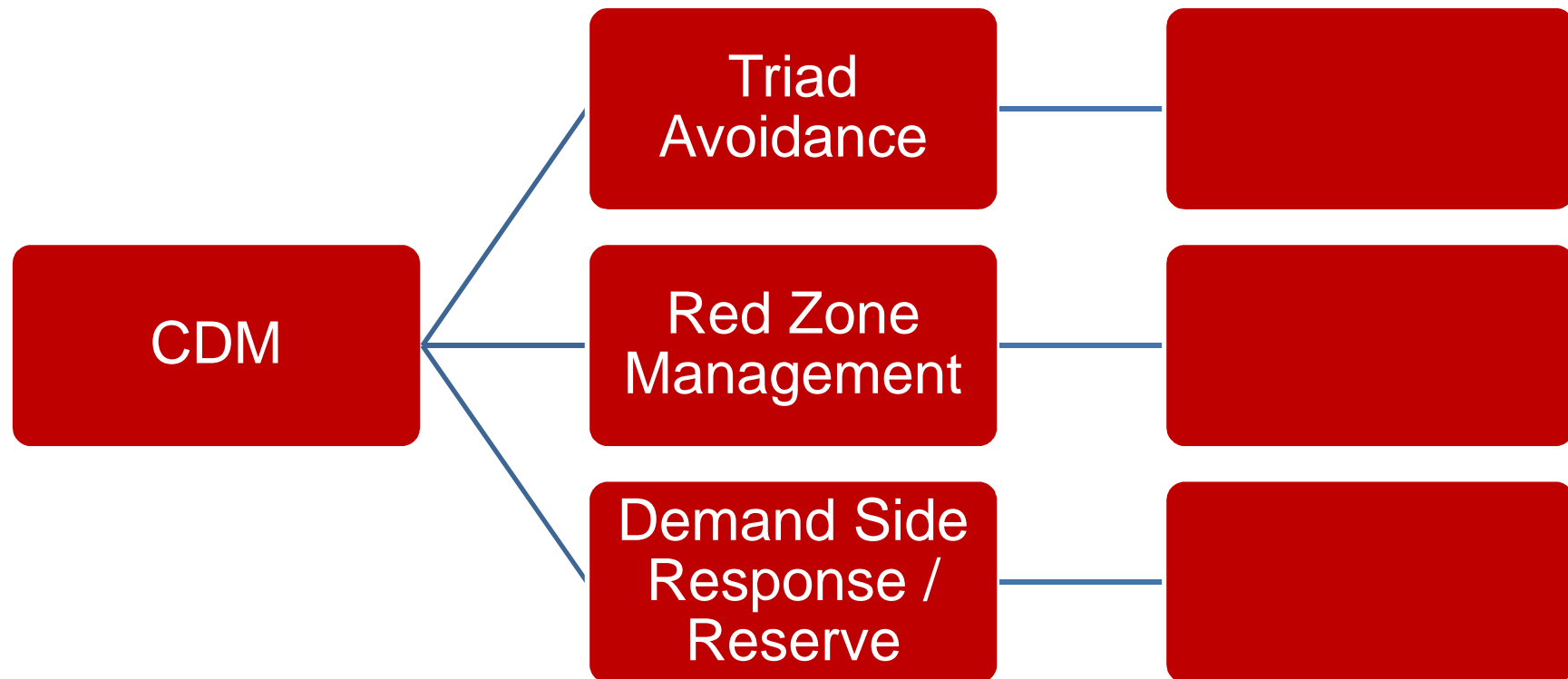


Jeremy Caplin
Energy Forecasting Manager



What is CDM

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Red Zone Management

DNO Distribution Use of System (DUoS) charges make up around 12% of electricity costs for Industrial and Commercial customers.

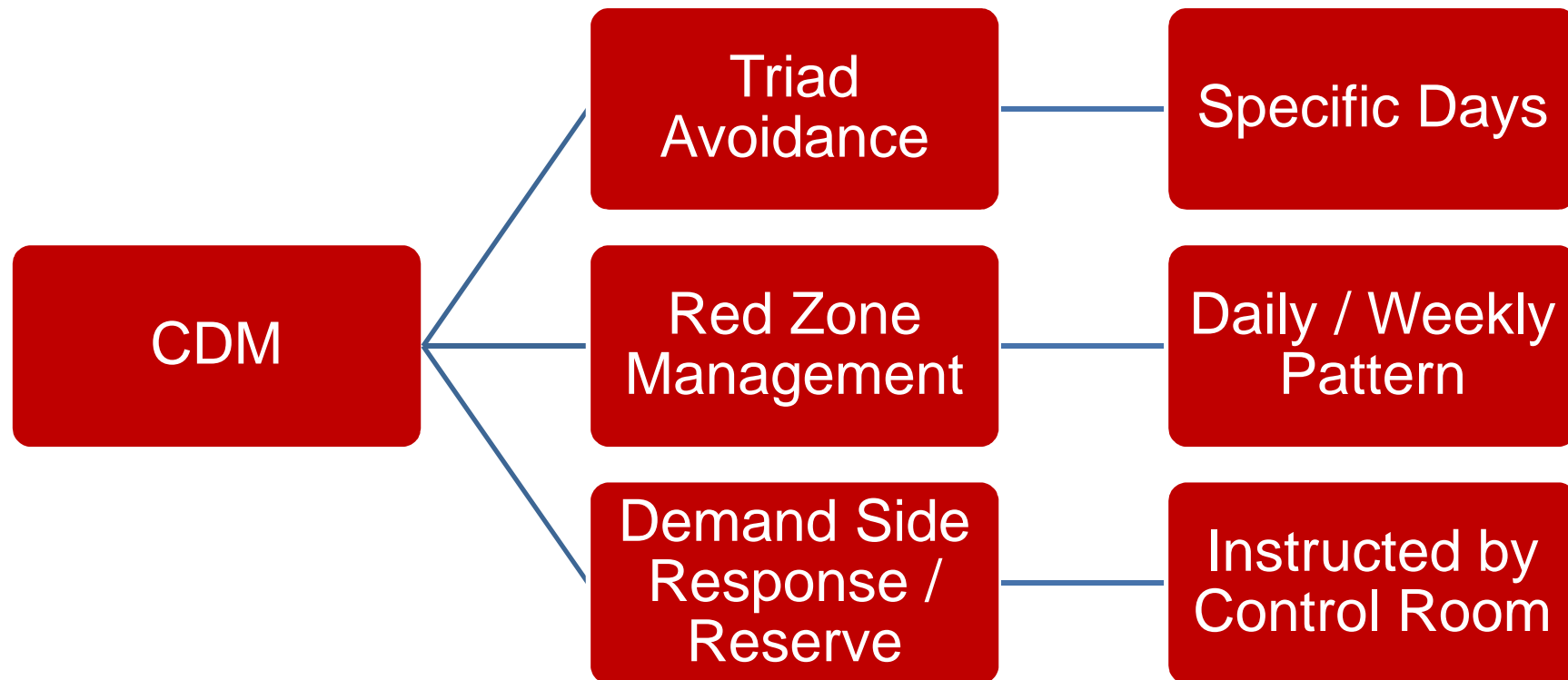
Charges are based on Red, Amber and Green Time Zones.
Red Zone is typically weekday 1600 – 1930.

Charges in the Red Zone are significantly higher than in the Amber and Green Zones.

Charges are intended to restrict peak time usage of half hourly Industrial and Commercial customers.

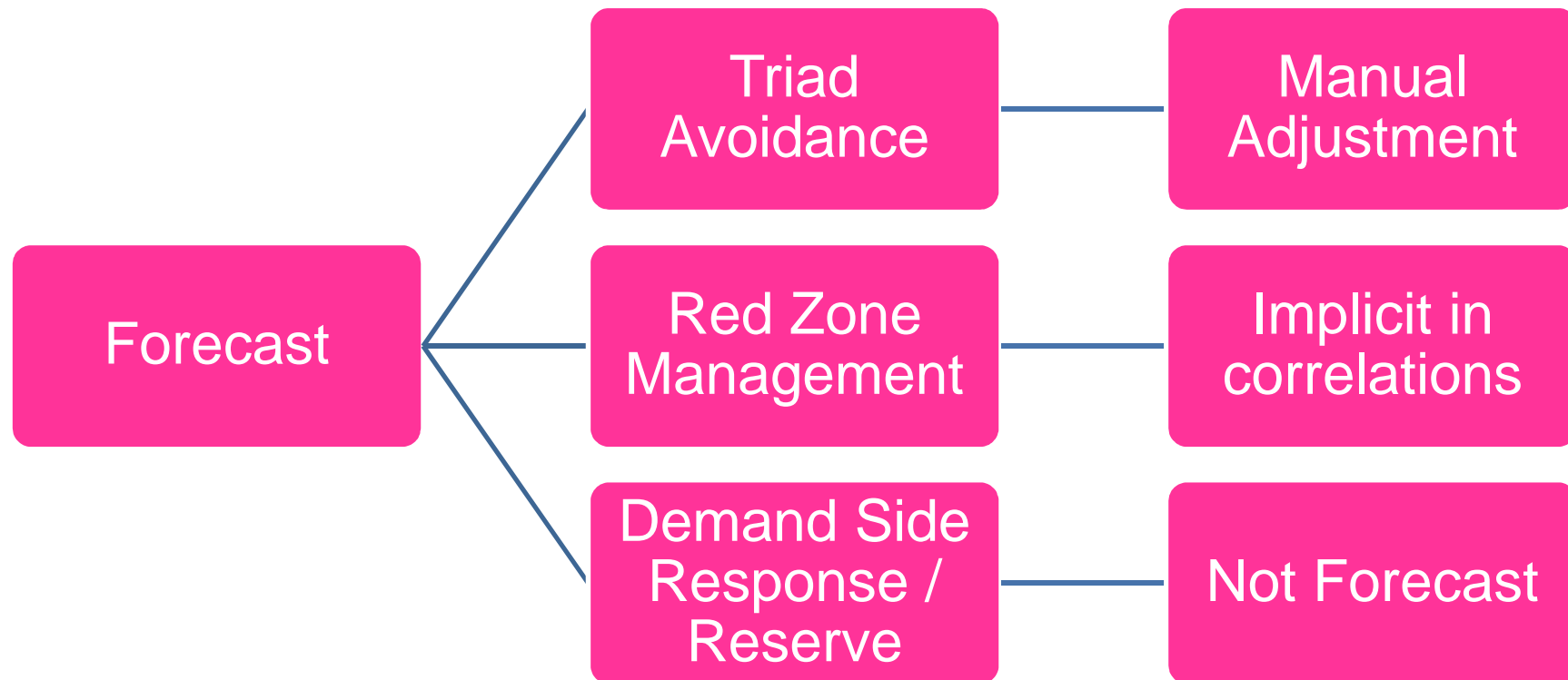
What is CDM

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How we forecast CDM

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How we forecast Triad Avoidance **nationalgrid**

Day - 1

- Initial forecast at 1700 based on demand forecast
- Not included in published forecast

Day – 1

- Forecast updated based on DP
- Included in BM Reports from 2100

Day

- Updated in morning following receipt of Triad Warnings


How we forecast Red Zone

nationalgrid

- 
- National Grid has no visibility of behaviour of DNO customers

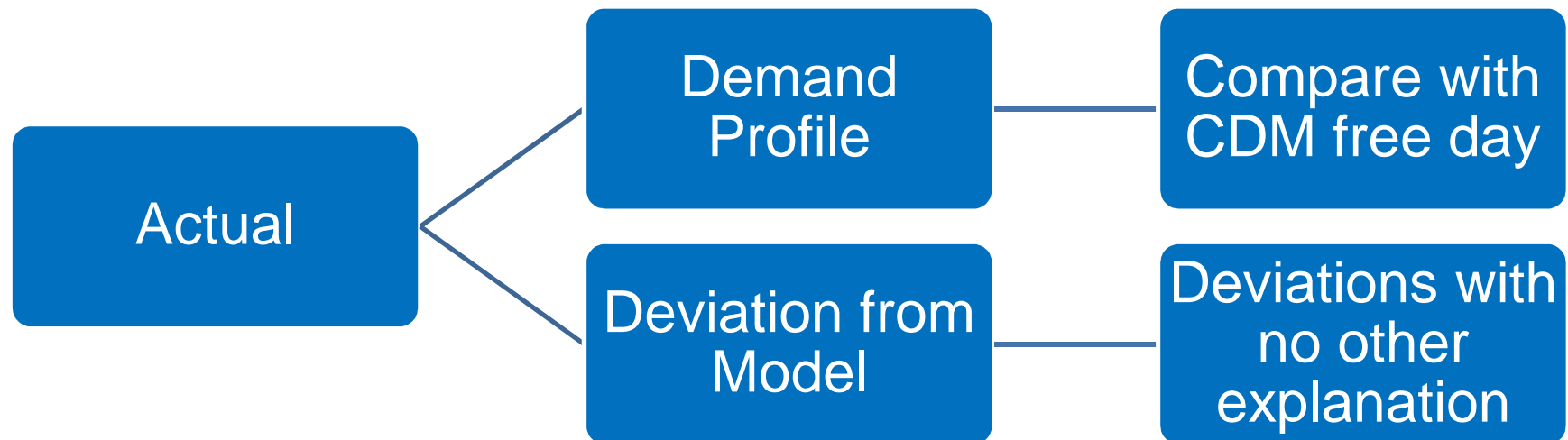
- 
- Demand forecast based on correlations over last three / four years

- 
- Correlations include behaviour of DNO customers

- 
- Assumes small changes in behaviour and volume year on year

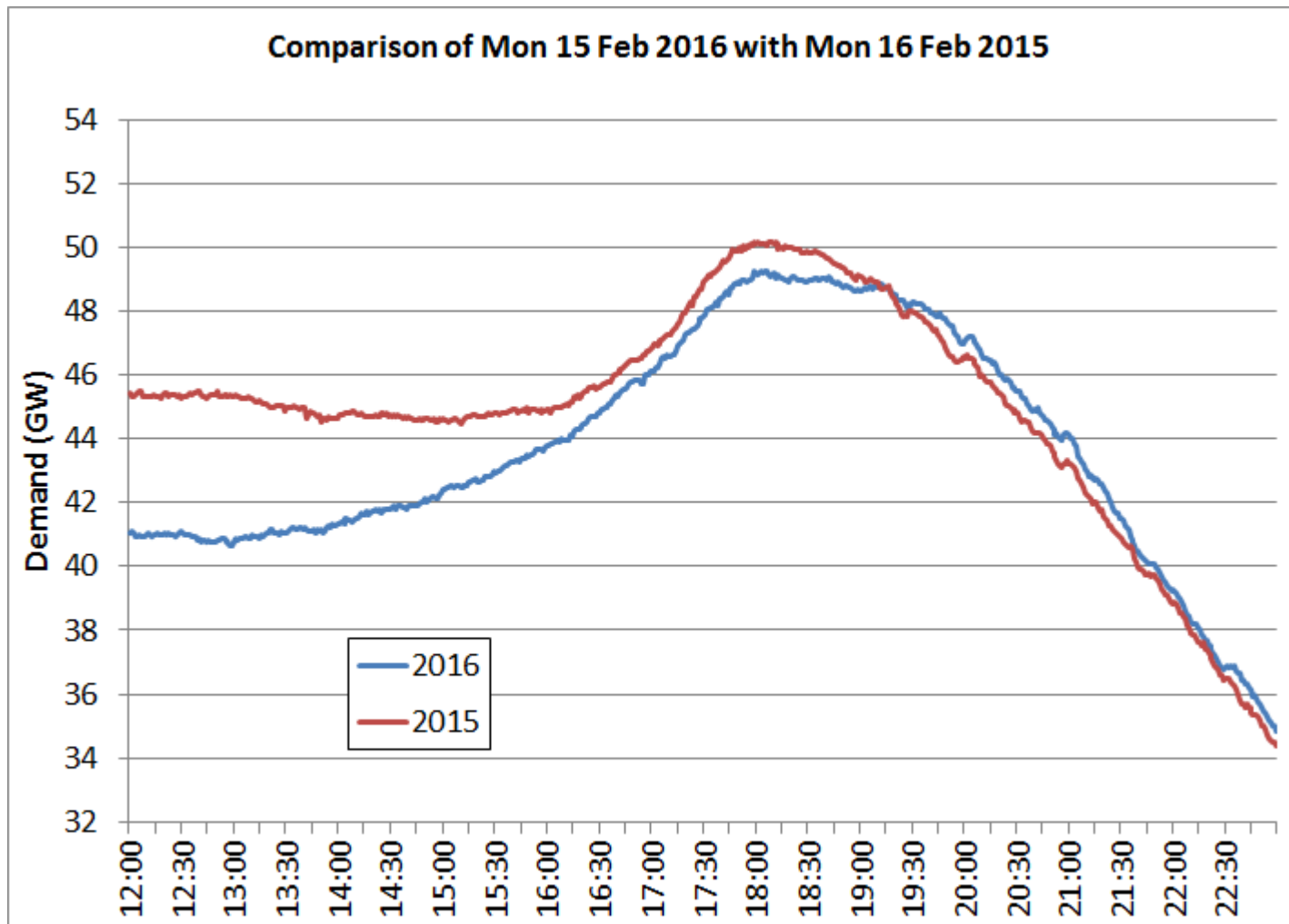
How we estimate actual Triad Avoidance

nationalgrid



How we estimate actual Triad Avoidance

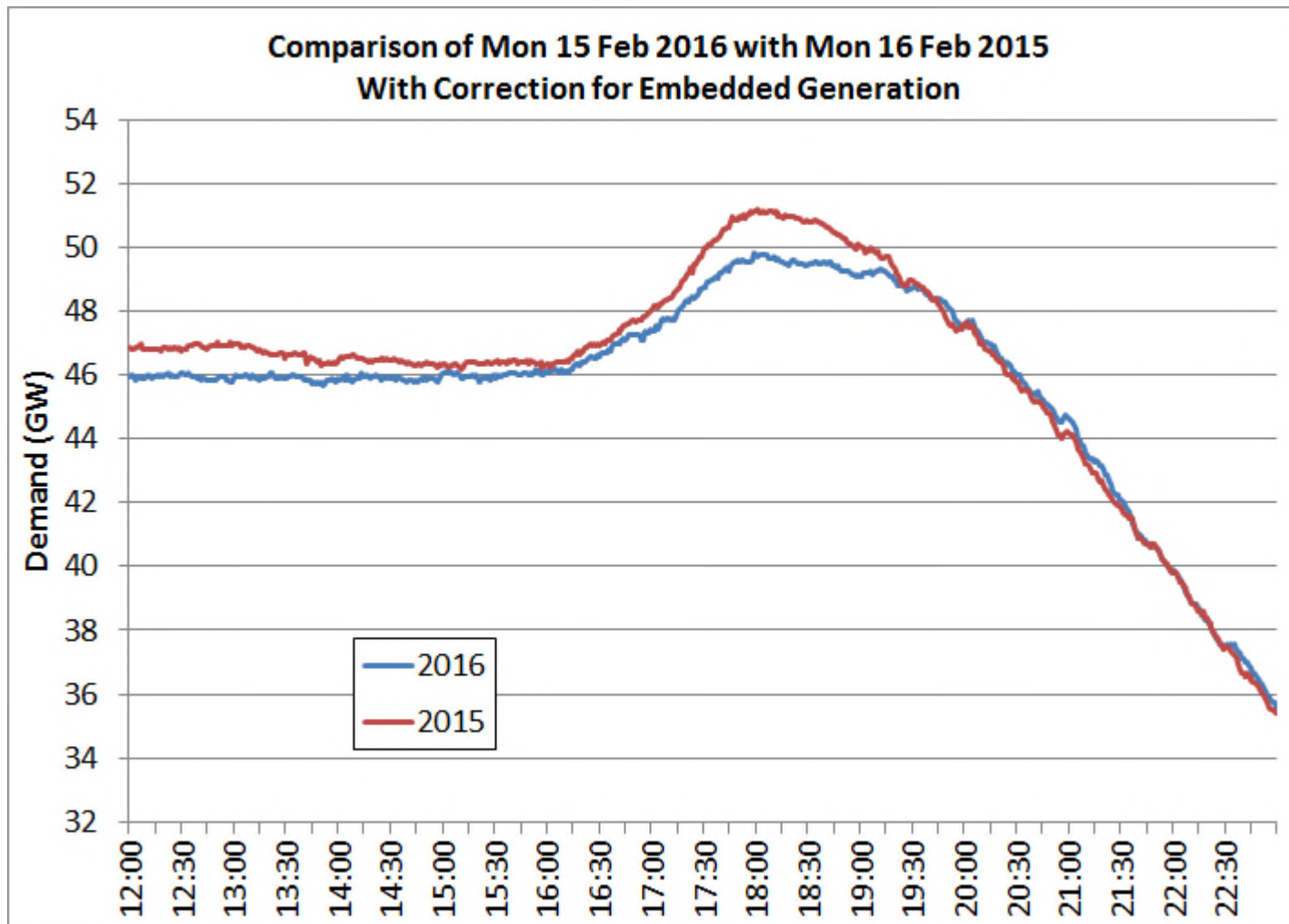
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- Compare profile with equivalent day
- Triad Avoidance profiles flat over DP

How we estimate actual Triad Avoidance

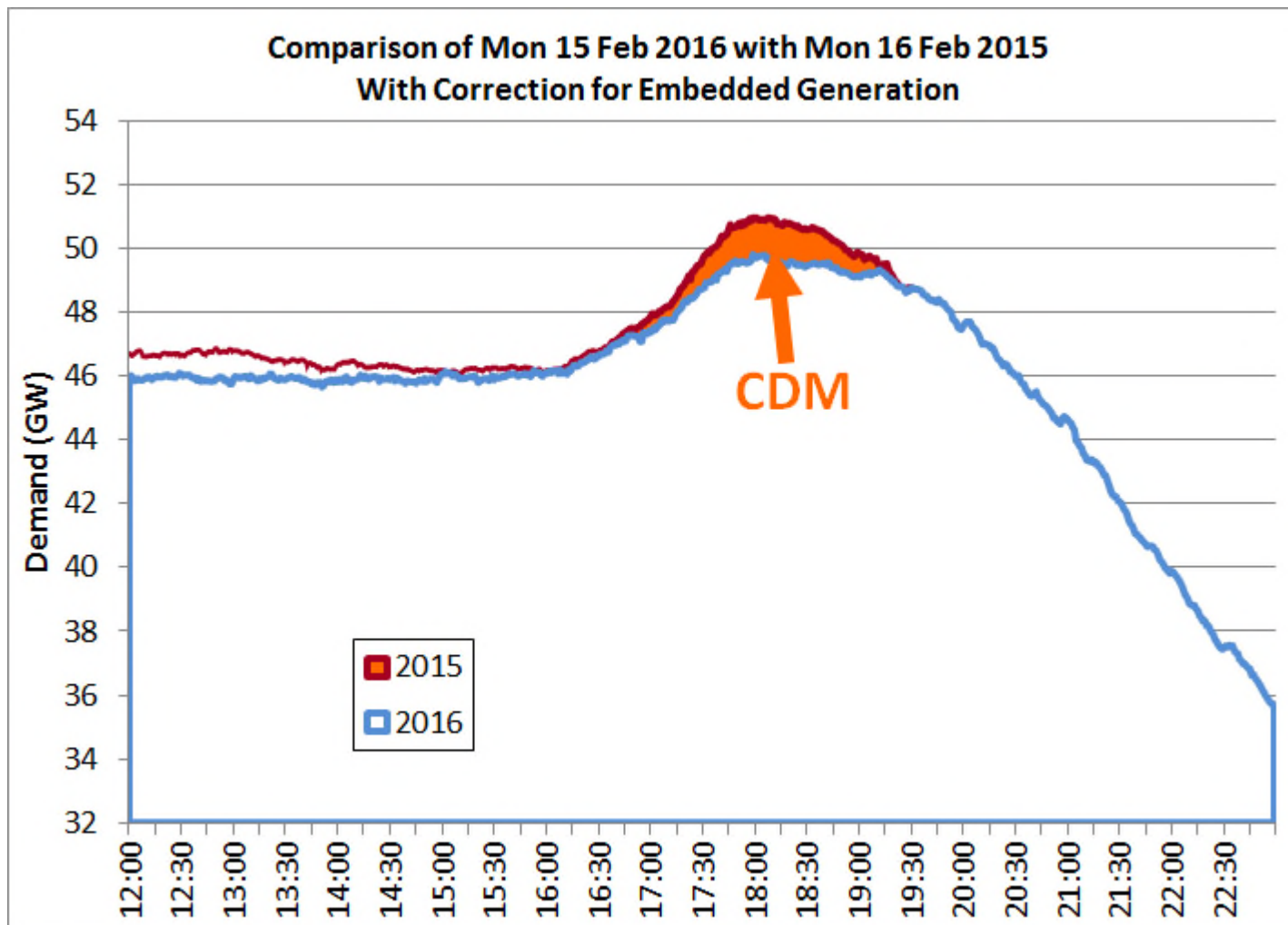
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- Adjust profiles for embedded (wind and PV) generation

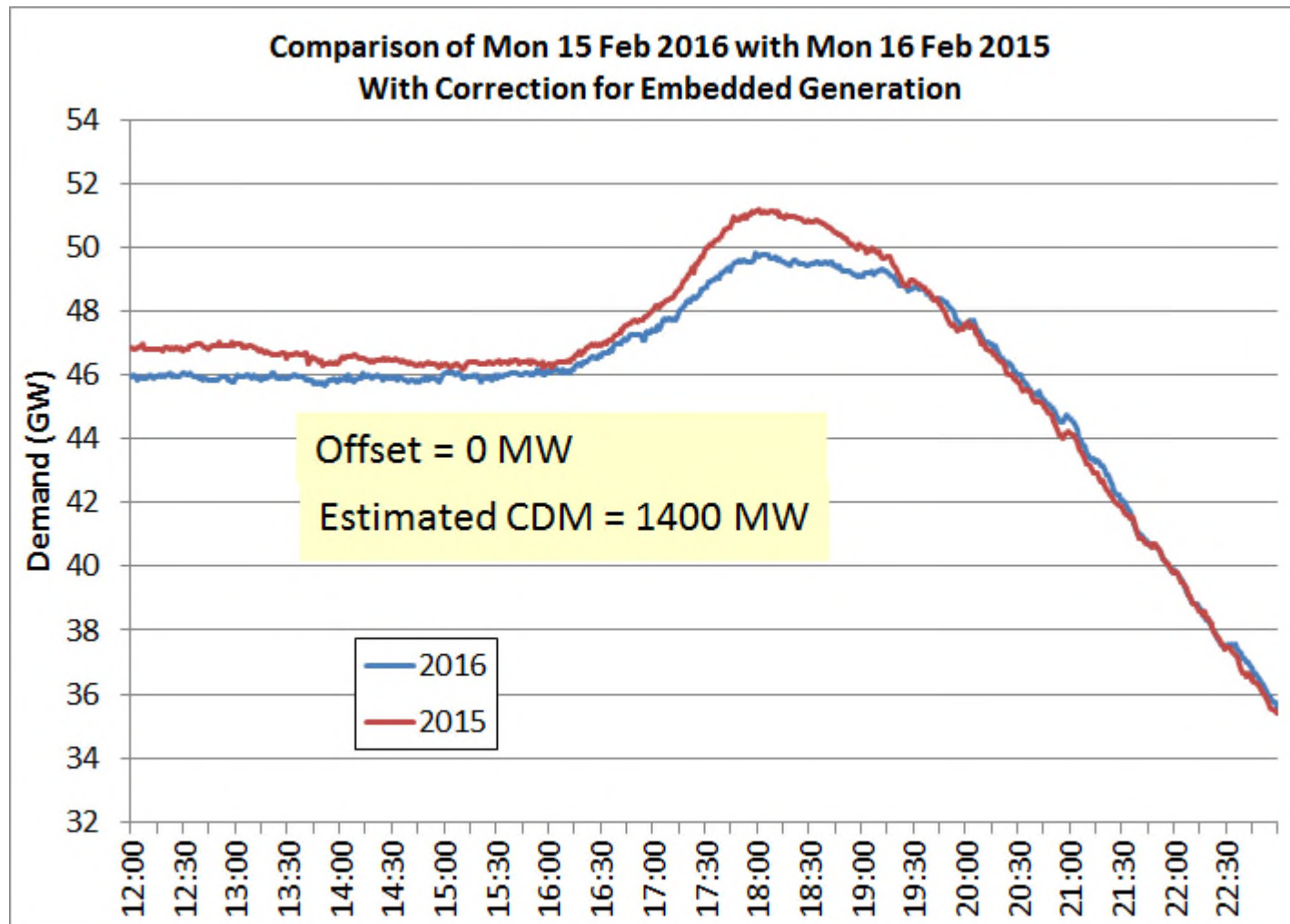
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How we estimate actual Triad Avoidance



- Difference in profiles can be attributed to Triad Avoidance

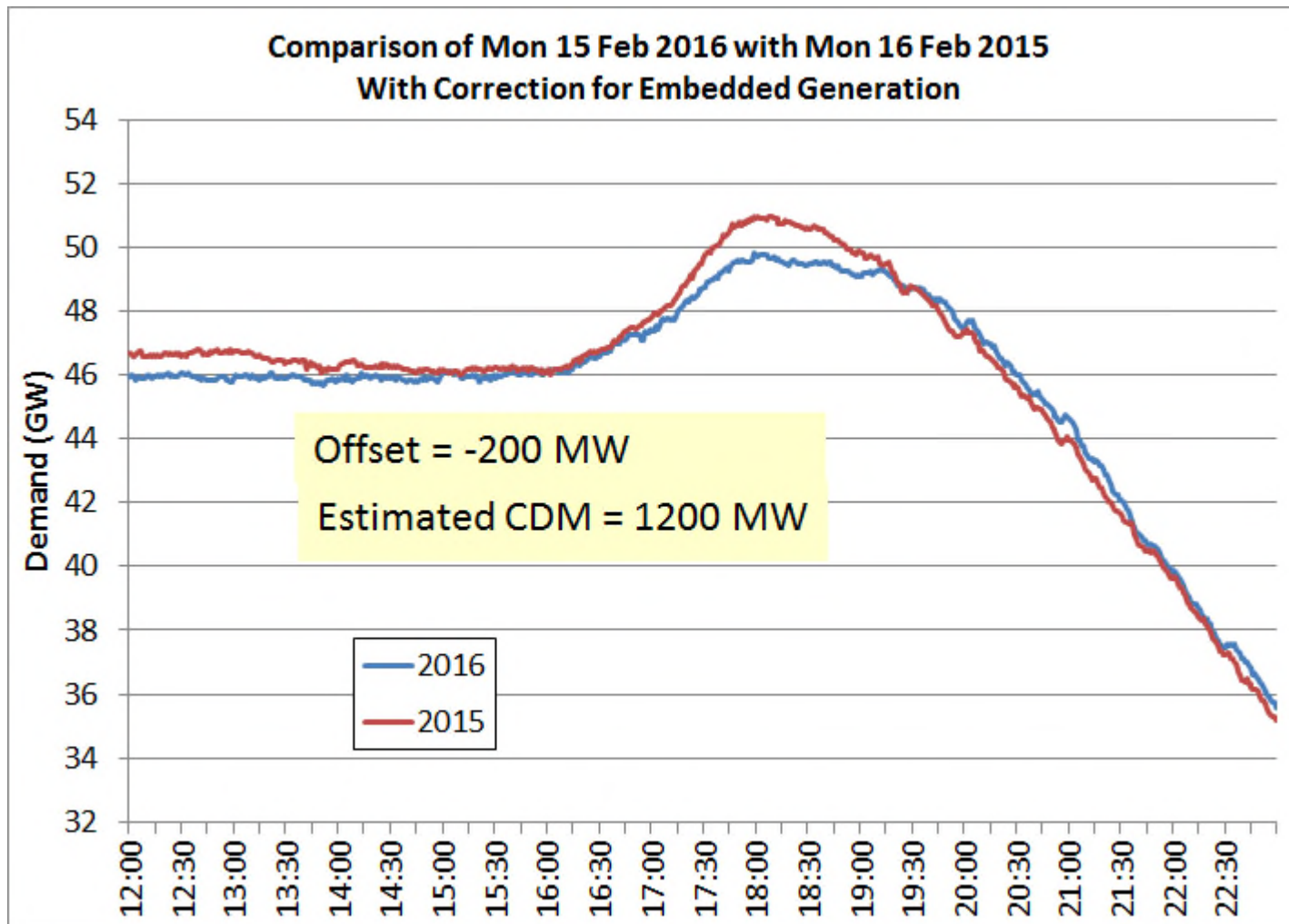
How we estimate actual Triad Avoidance



- Offset historic day profile to match observed profile as closely as possible

How we estimate actual Triad Avoidance

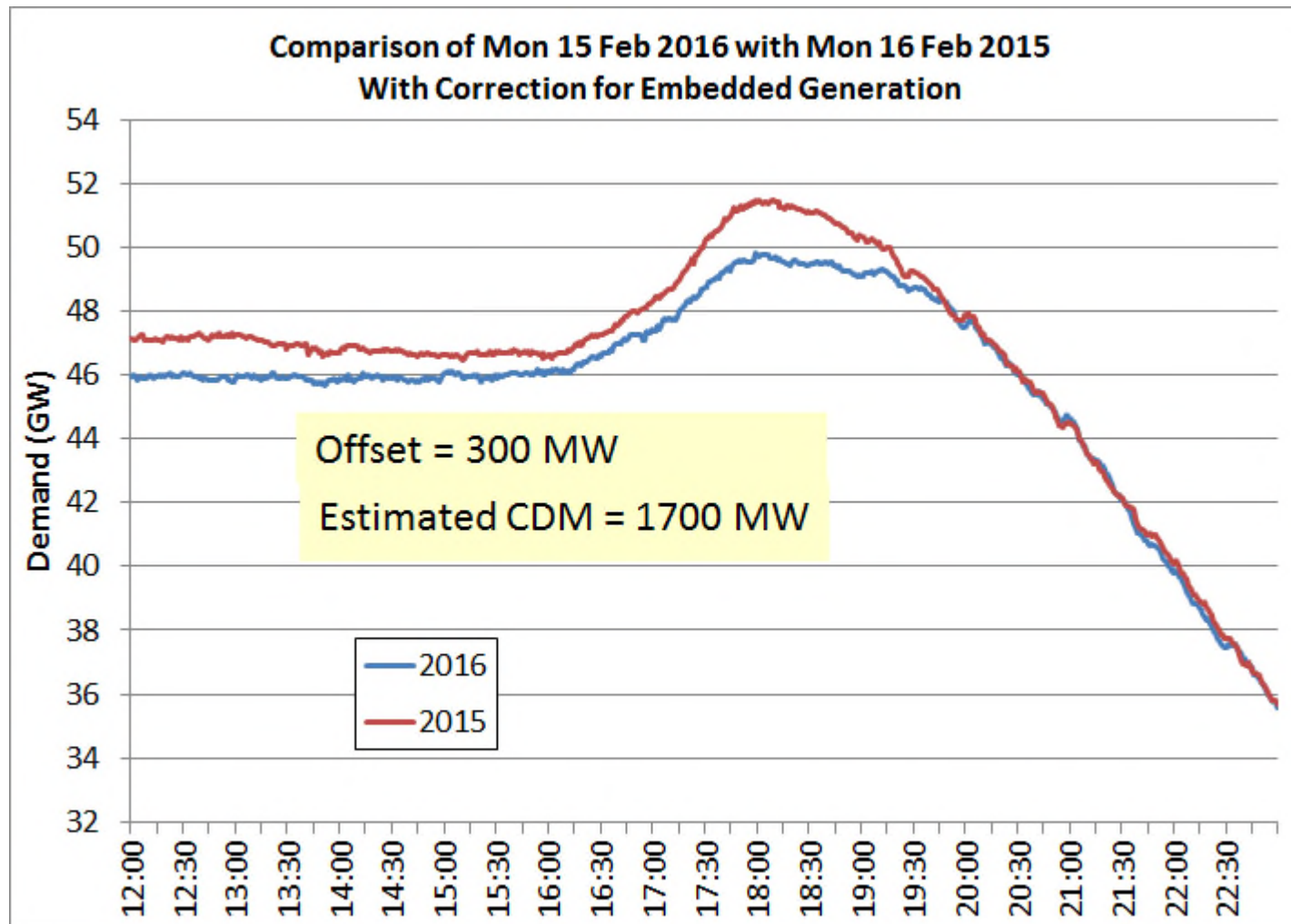
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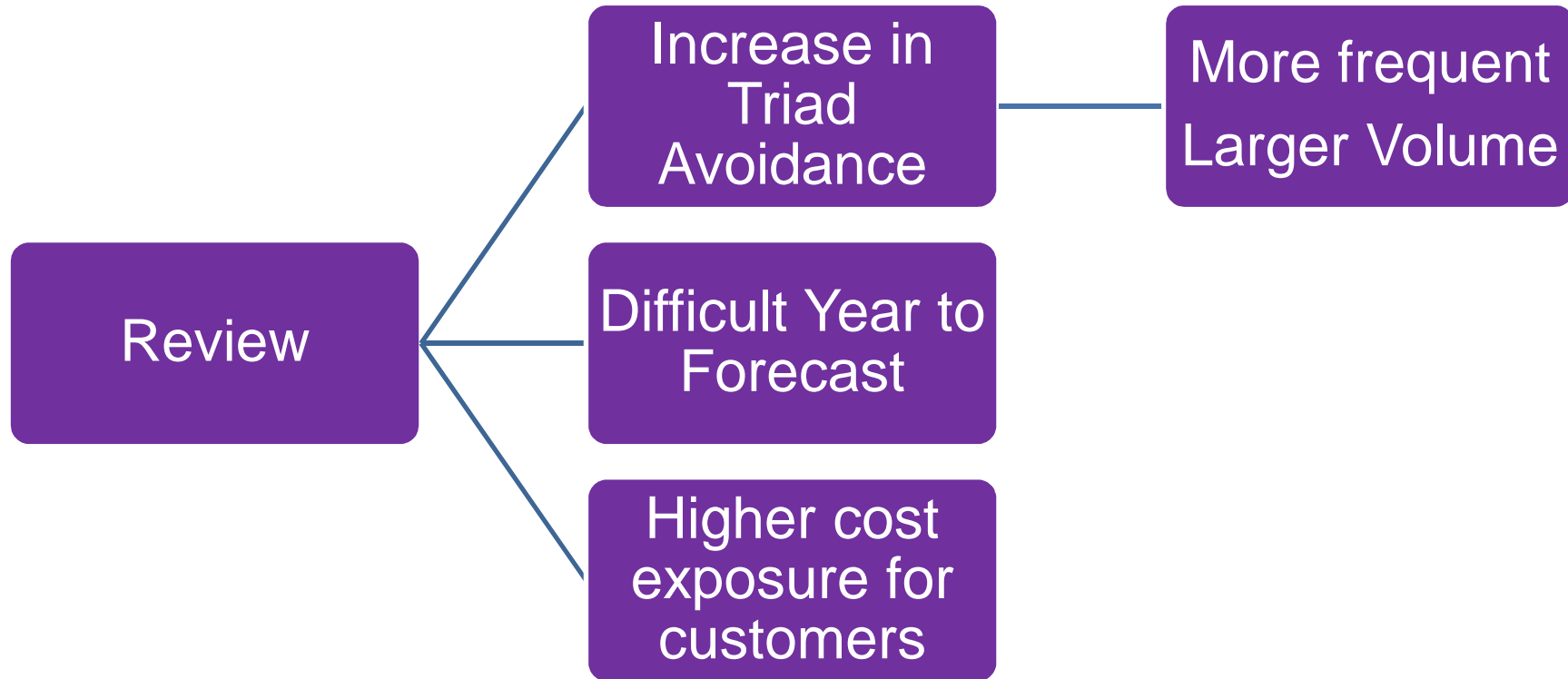
- Can be hard to judge best fit

How we estimate actual Triad Avoidance

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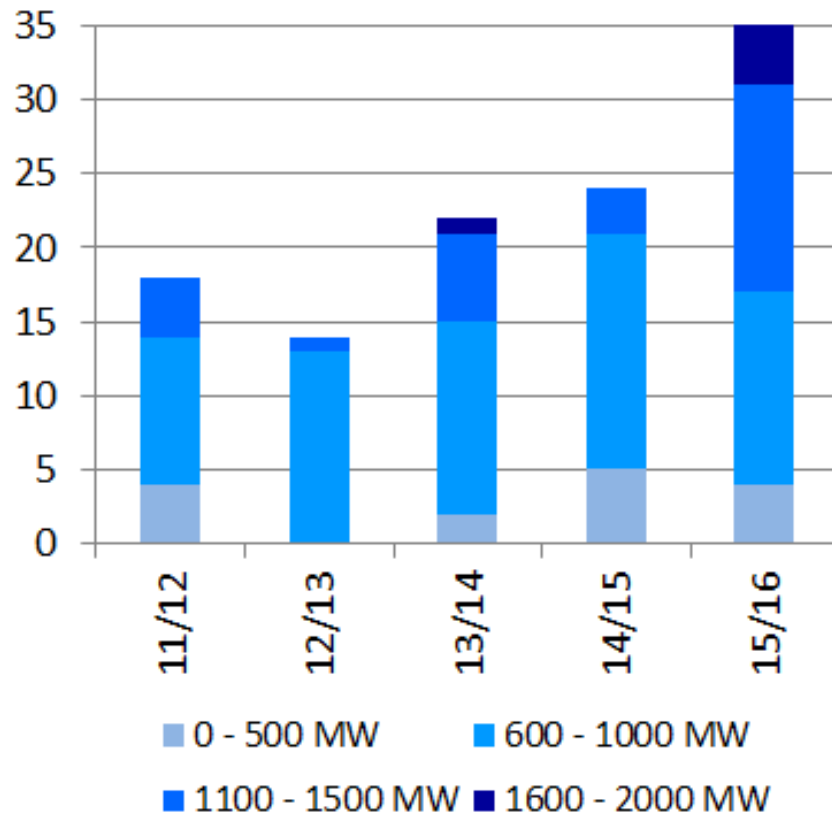


- Combine values from profile comparison with value from model deviation to estimate actual Triad Avoidance
- Art not science!



Review of Year to Date

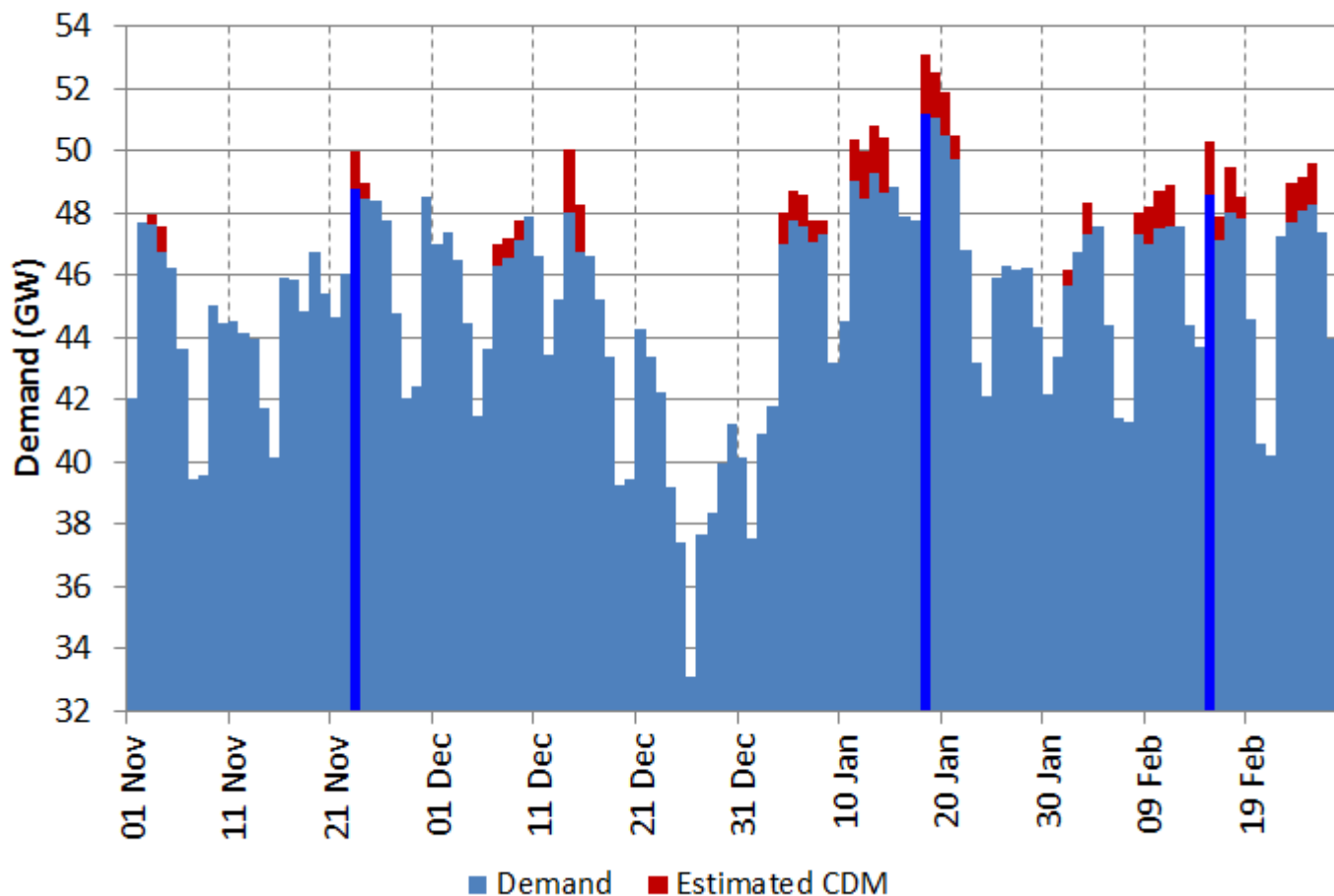
Number of CDM Events by Year



- CDM (Triad Avoidance) events increasing in number each year
 - 35 Events this year, up from 24 last year
- Events also increasing in magnitude


Review of Year to Date

Daily Peak Demand With CDM



- Triad Avoidance has reduced peak loads on system
- Similar demand levels across winter lead to several periods of Triad Avoidance

- 
- Abnormally warm weather increased difficulty in forecasting Triads

- 
- Increased cost exposure to Triads for customers / large savings for those who get it right

- 
- Triad Avoidance seen more frequently and at higher volumes

- 
- Triad Avoidance lead to reduced peak loads on system

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Q&A

jeremy.caplin@nationalgrid.com