Customer Demand Management

What is CDM

How we forecast CDM

How we estimate actual CDM

Review of year to date
What is CDM

CDM

- Triad Avoidance
- Red Zone Management
- Demand Side Response / Reserve
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

CDM

- Triad Avoidance
- Red Zone Management
- Demand Side Response / Reserve
- Specific Days
- Daily / Weekly Pattern
- Instructed by Control Room
How we forecast CDM

Forecast

Triad Avoidance

Manual Adjustment

Red Zone Management

Implicit in correlations

Demand Side Response / Reserve

Not Forecast
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
• 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

- Compare profile with equivalent day
- Triad Avoidance profiles flat over DP
How we estimate actual Triad Avoidance

- Adjust profiles for embedded (wind and PV) generation

![Comparison of Mon 15 Feb 2016 with Mon 16 Feb 2015 With Correction for Embedded Generation](image-url)
How we estimate actual Triad Avoidance

- Difference in profiles can be attributed to Triad Avoidance
Offset historic day profile to match observed profile as closely as possible.

How we estimate actual Triad Avoidance
How we estimate actual Triad Avoidance

- Can be hard to judge best fit

Comparison of Mon 15 Feb 2016 with Mon 16 Feb 2015
With Correction for Embedded Generation

Offset = -200 MW
Estimated CDM = 1200 MW

Demand (GW)

12:00 12:30 13:00 13:30 14:00 14:30 15:00 15:30 16:00 16:30 17:00 17:30 18:00 18:30 19:00 19:30 20:00 20:30 21:00 21:30 22:00 22:30

2016
2015
How we estimate actual Triad Avoidance

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

Comparison of Mon 15 Feb 2016 with Mon 16 Feb 2015
With Correction for Embedded Generation

Offset = 300 MW
Estimated CDM = 1700 MW
Review of Year to Date

- Increase in Triad Avoidance
- Difficult Year to Forecast
- Higher cost exposure for customers
- More frequent Larger Volume
CDM (Triad Avoidance) events increasing in number each year
- 35 Events this year, up from 24 last year
- Events also increasing in magnitude
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.