Control Room
difficult day

Paul Corre
National Control
Scheduling and Real Time Operation on Easter Sunday 2019

• How do we plan and what do we plan.

• Toolkit.

• Actions taken and Consequences
How do we plan and what do we plan.

- **Energy Balancing**
  - Analysis of BMU Data (from 11:00 at Dayahead stage)
  - Analysis of contracted Ancillary Services.
  - Analysis of predicted Interconnector flows.
  - Demand Forecasting.

- **Transmission System Planning**
  - Outage Planning
  - Contingency Off-line and On-line analysis of Transmission System
  - Voltage support requirements from BMUs. (Use of MVARs)
Demand Forecasting

Use of historical days:

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<tbody>
<tr>
<td>Good Friday</td>
<td>19th April</td>
<td>30th March</td>
<td>14th April</td>
<td>25th March</td>
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<tr>
<td>Easter Sunday</td>
<td>21st April</td>
<td>1st April</td>
<td>16th April</td>
<td>27th March</td>
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<tr>
<td>Easter Monday</td>
<td>22nd April</td>
<td>2nd April</td>
<td>17th April</td>
<td>28th March</td>
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<tr>
<td>BST Starts</td>
<td>31st March</td>
<td>25th March</td>
<td>26th March</td>
<td>27th March</td>
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Historical Demand Profiles for Easter Sunday

- Yellow – actual profile from Easter Sunday 21st April 2019.
- Red – 1st April 2018
- Purple – 16th April 2017
- Grey – 27th March 2016
Demand Forecasting – What factors do we look at?

• **Weather**
  • How does this effect people’s behaviour and actions.
    • Temperature.
    • Illumination.
    • Wind Speed and direction.
    • Precipitation type and amount.
  • Wind output (Embedded and BMU Wind).
  • PV output.

• **Other factors:**
  • Effect of change to British Summer Time.
  • Special events.
Demand Forecasting – What factors do we look at?

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<tbody>
<tr>
<td>PV Max (GW)</td>
<td>8.1</td>
<td>3.1</td>
<td>4.3</td>
<td>3.8</td>
</tr>
<tr>
<td>Wind Emb</td>
<td>3.1</td>
<td>1</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>Av GB Temp – C Degrees</td>
<td>20</td>
<td>6</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Illumination</td>
<td>-10</td>
<td>-25</td>
<td>-25</td>
<td>-30</td>
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Illumination: -5 change equates to 70MW change during the daytime. Temperature: 1 degree equates to 730MW during the daytime.
Demand Forecasting – What factors do we look at?

GMT 2018/2019 Seven Day Coventional Models Relative Temperature Effects
These plots are indicative only. Please refer to EFS Weather Equation for precise data on model response.

Temp effect on demand with 1 degree change
2B/3B: -730 MW
Toolkit

- **Information from Transmission System analysis to determine most effective BMUs to give system security support.**
  - Use of Trading.
  - BMUs utilised through Balancing Mechanism.
- **Demand Forecast output:**
  - Production of demand profile with confidence levels and continuous reassessment.
  - Energy Balancing Requirements – meet demand and margin requirements.
  - Frequency Response.
  - Largest loss assessment (response and RoCoF)
  - Potential requirements for trading on Interconnectors.
Actions taken and Consequences

• **Actions taken on Easter Sunday 2019**
  • Units acquired through Trading and BM for system security
  • Congestion through Transmission system out of Scotland
  • Trading on Interconnectors

• **Consequences**
  • Lowest demand was afternoon trough and not the overnight trough.
    • Daytime demand – 18.2GW
    • Sunday morning demand – 19.2GW
    • Demand Forecast errors of upto 1GW seen throughout the daytime.