Welcome from the Chairman

Gareth Spinner, Director, Noveus
and Independent Chairman of LPN Panels

Welcome from the Chairman
Safety and housekeeping

- No planned fire alarms
- Emergency exits
- Fire assembly points
- Toilets
- Mobile phones

- Data Protection - we record our findings and publish a report of the proceedings and our follow-up actions
Today’s Agenda

09:30 – 09:40  INTRODUCTIONS AND OVERVIEW OF PROCESS

9:40 – 10:10  KEY ELEMENTS OF UK POWER NETWORKS EMERGENCY RESPONSE
  • Our network
  • How we respond to emergencies
  • Our role under the Civil Contingencies Act

10:10 – 10:40  THE COMMUNITY RISK REGISTER AND OUR KEY RISKS
  • Black start and Rota Disconnection
  • Pandemic flu

10:40 – 11:00  COFFEE

11:00 – 11:30  WORKING IN COLLABORATION WITH ORGANISATIONS

11:30 – 12:00  LESSONS LEARNT FROM RECENT EMERGENCY RESPONSES

12:00 – 12:10  FLOOD MITIGATION PROGRAMME

12:10 – 13:00  Q&A SESSION

13:00 – 14:00  LUNCH
Key UK Power Networks team here today

Matt Rudling
Director of Customer Services

Steve White
Head of Network Operations & Control

John Gibbs
Contingency Planning Manager

Bill D’Albertanson
Emergency Planning Manager
Bill D’Albertanson—
Emergency Planning Manager

Key elements of UK Power Networks emergency response
Transmission Networks

There are four high voltage transmission networks in the UK.

National Grid own and operate the transmission network in England and Wales.

The transmission networks act like the motorway system and enable the bulk transfer of high voltage electricity (direct from large power stations) around the country.
Distribution Networks

Regional grids that branch from the national grids to deliver power to industrial, commercial and domestic users.

London Power Networks (LPN)

- 2.2 million end customers
- 665 sq. km service area
- 30,900 km u/ground network
- 47 km overhead network
- Transformer Capacity 20,000 MVA
- 5,300 MW peak demand
Distribution Networks

Generation

Grid Entry Point

NGT 400kV & 275 kV transmission

Distribution - 132kV & lower

Grid Supply Point
Our Network

- National Grid 400/275kV
- 132kV Traction supplies
- 25kV Traction supplies
- 66/33/22kV
- 11kV Industrial & large commercial
- 400/230V Domestic & Small commercial

400/230V
How we manage incidents

Structure
- Regions and areas

Command and Control
- Strategic, tactical and operational
- Decision making at lowest possible level and communications to the highest appropriate level

Gold Liaison Officers
- Senior managers with technical knowledge and operational experience

Three Top Electricity Risks
- H38 – Rota Disconnections
- H41 – Total Shutdown
- H45 – Regional Shutdown
The Civil Contingencies Act, and accompanying non-legislative measures, delivers a single framework for civil protection in the UK.

Category 1 organisations - core of response to most emergencies - emergency services, local authorities, NHS bodies.

Category 2 organisations are the Health and Safety Executive, transport and utility companies and are ‘co-operating bodies’.

Category 2 responders have a lesser set of duties - co-operating and sharing relevant information with other Category 1 and 2 responders.
Any questions?
Bill D’Albertanson–
Emergency Planning Manager

The community risk register and our key risks
Community Risk Register

• The National Risk Register
• This is the first step in providing advice on how people and businesses can better prepare for civil emergencies.
• Community Risk Register
• The Civil Contingencies Act 2004 requires emergency responders in England and Wales to co-operate in maintaining a public Community Risk Register
• These are approved and published by LRFs, which include representatives from local emergency responders as well as public, private and voluntary organisations
## Risks of terrorist and other malicious attacks

<table>
<thead>
<tr>
<th>5</th>
<th>Catastrophic terrorist attacks</th>
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<tr>
<td>4</td>
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<tr>
<td>3</td>
<td>Cyber attacks: Infrastructure</td>
<td>Attacks on infrastructure Smaller-scale CBR attacks</td>
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<th>Low</th>
<th>Medium Low</th>
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<th>Medium High</th>
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## Risks of natural hazards and major accidents

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<tr>
<td>3</td>
<td>Major industrial accident</td>
<td>Major transport accident</td>
<td>Other infections diseases</td>
<td>Inland flooding</td>
<td>Severe space weather</td>
<td>Low temps. and heavy snow</td>
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- **Between 1 in 20,000 and 1 in 2,000**
- **Between 1 in 2,000 and 1 in 200**
- **Between 1 in 200 and 1 in 20**
- **Between 1 in 20 and 1 in 2**
- **Greater than 1 in 2**

- Pandemic influenza
- Effusive volcanic eruption
- Major industrial accident
- Major transport accident
- Other infections diseases
- Inland flooding
- Severe space weather
- Low temps. and heavy snow
- Heatwaves
- Zoonotic animal diseases
- Explosive volcanic eruption
- Storms and gales
- Public disorder
- Non-zoonotic animal diseases
- Disruptive industrial action
What can go wrong – the risks
NEP - Gas and Electricity

Lead Government Department: Department for Energy and Climate Change (DECC)

Operational Response (Local Emergency)

- NSC (THRC) SGoRR
- OGD/DA
- DCG
- JRT
- RED Scg
  Gold Command
- GDNs
- DNOs

Gas Industry

Electricity Industry

Note:
- Other organisations such as National Grid may also be involved in the operational response to a local emergency depending on the nature of the incident.
- In the event of an emergency in Scotland the Scottish Government would activate the Scottish Government Resilience Room (SGoRR).

National Emergency Plan for Gas & Electricity v.14

Energy Emergencies Executive Committee (E3C)

If an emergency occurs outside usual office hours the current arrangements are that the GIS Night Duty Officer is called in the first instance on 020 7215 3221 or 020 7215 3566, who will contact the DECC Downstream Gas & Electricity Duty Officer.

The DECC switchboard number during working hours is 0300 000 4000

November 2012
Cyber Security

1. **Guard Level**  
   Normal running

2. **Cyber Threat – Guard Level**
   Applicable in the event of imminent threats. Access restricted to locations with defined operational roles and processes that rely on control systems, including essential 3rd parties.

3. **Significant Cyber Threat – Guard Level**
   Serious cyber threat or incident that appears to come from outside the company or unexplained switching occurs on the power network. Access restricted to core control system users.

4. **Major Cyber Incident – Guard Level**
   Applicable in the event of a major cyber attack such as a virus outbreak spreading across the UK Power Networks network. Access restricted to Control Rooms.
Bill D’Albertanson—
Emergency Planning Manager

Working in collaboration with organisations to respond to emergencies
Collaboration to monitor possible causes of emergencies

- Hazard Manager
- National Severe Weather Warning Service
- Met Office Advisers (Civil Contingencies)
- Daily Risk Assessment, alerts and warnings, guidance

- Flood Warnings Direct
- Targeted Flood Warnings Service
- Flood Guidance Statements
Collaboration to restore power supplies quickly

- NEWSAC
- Contractors
- Suppliers
- Other utilities

Use of helicopters
Lessons learnt and collaboration in Customer Services
Keeping customers informed

- **Key Initiatives**
- Customer Information Officers
- Improved Fault Interactive voice response system
Call centre response time

**Key Initiatives**
- Live power cut map on our website launched
- Online self-service fault reporting application on our website also launched
- Social media

![Image of call centre]
Business Transformation

Online customer portal
- Better flexibility and choice through a range of self-service features
- These include booking appointments, making payments and tracking progress

Customer Relationship Management System
- Better customer data
- Full customer history
- Improved response time to all customer requests

Mobile Solutions
- An enhanced service for our customers through our shift from paper to technology
- Field staff will have mobile devices allowing them access to email, documents and images
Collaboration to support vulnerable customers

Priority Services Register

British Red Cross

Local Authorities

Catering companies and hotels
Collaboration in communications and raising awareness of UK Power Networks

- Media organisations
  - Radio
  - Television
  - Newspapers
- Energy Networks Association
  - Information on the scale of an emergency for press releases
- Stakeholder updates throughout emergency event
Forthcoming collaboration

Power cut information to be sent out in Local Authority literature

A dedicated telephone line for Local Authorities during system emergencies.

Vulnerable customer information to be produced in the seven most spoken languages
Lessons learnt from recent emergency response events

Steve White –
Head of Network Control & Operations
UK Power Networks has three licenced networks – LPN, EPN & SPN

**London Power Networks (LPN)**
- 100% underground apart from a very small amount of 66,000 volt and 132,000 volts overhead line
- Unique in the UK
- High resilience

**Southern Power Networks (SPN)**
- 100% underground

**Eastern Power Networks (EPN)**
- Significant amount of overhead line network at all voltages
- Significant amount of underground network at all voltages
- Overhead vulnerable to high winds and lightning
Overhead line networks are vulnerable to severe weather events
Winter 2013/14 – Overhead line weather disruption

10 weather alerts

10 system emergency prepares

3 full system emergencies

- St Jude’s
  - 27 October 2013

- Christmas
  - 23 December 2013

- Valentines
  - 14 February 2014
## Faults during severe weather events

<table>
<thead>
<tr>
<th>Event</th>
<th>Number of affected customers</th>
<th>Last Customer Restored</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 27 2013</td>
<td>626,000</td>
<td>5 days</td>
</tr>
<tr>
<td>December 23 2013</td>
<td>322,000</td>
<td>7 days</td>
</tr>
<tr>
<td>February 14 2014</td>
<td>236,000</td>
<td>2 days</td>
</tr>
</tbody>
</table>

*Automation and remote control allowed good initial restoration*
Storm industry reviews

Two External reviews completed

• DECC
• Ofgem

Continuous improvement

• Robust resourcing in place
• Early determination of storm impact
• Providing customers with accurate information
Monitoring, Impact Assessment, Planning and Restoration
Planning and mobilisation

- Incident Management Team
- Strategic Team
- Restoration Resources
- Support Systems
- Internal & ext. Comms
- Welfare
- Logistics
- Scouts
- Call centre & overflow
- Safety & inductions
- Tactical Teams
- Site Teams
- Emergency Resource Centres
- Generation
Assessing the weather risk!

**Weather Alerts**

- System Emergency Watch
- System Emergency Warning (Prepare)
Assessing the potential impact

<table>
<thead>
<tr>
<th>SPN</th>
<th>60mph</th>
<th>65mph</th>
<th>70mph</th>
<th>75mph</th>
<th>80mph</th>
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</thead>
<tbody>
<tr>
<td>HV Faults</td>
<td>34</td>
<td>65</td>
<td>118</td>
<td>218</td>
<td>362</td>
</tr>
<tr>
<td>LV Faults</td>
<td>50</td>
<td>123</td>
<td>180</td>
<td>339</td>
<td>562</td>
</tr>
<tr>
<td>SP Faults</td>
<td>57</td>
<td>107</td>
<td>146</td>
<td>255</td>
<td>408</td>
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<tr>
<td>Customers Affected</td>
<td>25198</td>
<td>57942</td>
<td>83216</td>
<td>154825</td>
<td>254939</td>
</tr>
<tr>
<td>Customer Calls</td>
<td>6471</td>
<td>14706</td>
<td>21294</td>
<td>39706</td>
<td>65294</td>
</tr>
<tr>
<td>24hrs Restore</td>
<td>29</td>
<td>74</td>
<td>88</td>
<td>171</td>
<td>294</td>
</tr>
<tr>
<td>48hrs Restore</td>
<td>15</td>
<td>37</td>
<td>49</td>
<td>88</td>
<td>147</td>
</tr>
<tr>
<td>72hrs Restore</td>
<td>10</td>
<td>22</td>
<td>33</td>
<td>59</td>
<td>103</td>
</tr>
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</table>
Actual response

For the St Jude storm in October last year 1800 front line field staff were mobilised including 400 imported staff from other DNO’s
However, the London network is different from other networks
London - more resilient due to network design

• Not vulnerable to severe wind or lightning weather event. Protected from large scale flooding

• Localised major (large) incidents that affect customers occur infrequently – eg Dartford in 2009, Carnaby St 2006 and 2011, West Ham 2012, Ebury Bridge 2013, Deptford 2014.

• Apart from the Dartford and Carnaby 2006 incidents all customers were restored within a few hours. Dartford was the biggest major event in the history of London Electricity.

• The same robust and well practiced emergency planning response processes apply.
London’s biggest major incident – Dartford 2009

- July 2009. Wilful damaged destroyed four 132,000 volt cable circuits supplying the Dartford area - major loss of infeed capacity - 77,500 customers affected.

- Specialist staff worked around the clock to install temporary generation and carry permanent repairs - a major engineering & logistical challenge.

- 3 hour rota disconnections were implemented until sufficient capacity was available to restore all customers after 72 hours.

- The only other occasion localised rota disconnections have been implemented in recent memory was in the Carnaby St area in 2006.
Management of London Region

- Understands the importance of Central London
- Wants to provide a world class service to the financial, political, entertainment and commercial centre of this great City;
- Increased number of separately managed and resourced Areas from 3 to 4 – Central London Area.
System security management

Centralised control centre
- EKP status
- Sophisticated SCADA systems with resilient IT
- 114 control shifted control engineers
- Optimise configuration of network in real time to reduce risk and respond to all incidents
- Disaster recovery plans
- Airwave communications for major incidents
- Pre and post fault contingency planning

Network management
- Dedicated network outage planners
  - planning one year ahead for strategic 132,000 volt outages
  - close liaison and coordination with National Grid
System security management

Security

• Access security system for major substations
• Most strategic cables installed in tunnels
• Control centre – EKP status
• Robust employee and contractor ID security pass

Field staff

• Highly skilled field staff with out of hours standby call-out arrangements
• Call on staff from other networks during system emergencies

Strategic spares

1000 metres of portable flood barrier
Flood Mitigation Programme

Based on a systematic approach agreed by the Distribution Networks Operators (DNO) through the ENA document ETR-138

Flood risks:
Tidal (sea), Pluvial (watercourse), Fluvial (surface), Infrastructure failure (water main burst and reservoirs failure)

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<tr>
<th></th>
<th>Tidal [AEP]</th>
<th>Fluvial [AEP]</th>
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<tbody>
<tr>
<td>Grid substation</td>
<td>1:1000</td>
<td>1:1000</td>
</tr>
<tr>
<td>Primary substation</td>
<td>1:200</td>
<td>1:100</td>
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</table>

Design considerations
Thames flood protection strategy
Flood level and freeboard
Ground type
Condition of critical equipment on site
Planning requirements
Number of customers
Critical customers
Asset replacement strategy
Flood Mitigation Programme

Time span: 2010-2023
No. of sites in the programme: 41 (24 water main burst – 17 tidal/fluvial)
Estimated budget: £7,343,634

Typical flood mitigation works:
Q&A

• Do UK Power Networks need to support Category 1 emergency responders better? How?
• Do you think that our improvements to date based on lessons learnt are sufficient?
• We are coordinating with Local Authorities in sending out our emergency information to raise awareness. Are there any other ways we can get our information to large numbers of people?
• We can have emergency situations that affect large numbers of people, but are restricted in the support we can ask for as a Category 2 responder. How can we work with you better to ensure the best support is in place for our affected customers?
• What opportunities are there for further collaborative working to support affected vulnerable customers?
Next steps

Join us again:

• In early November, for a session which will focus on Vulnerable Customers.

• In December for Critical Friends 9 to discuss Corporate Social Responsibility and Sustainability

Before we finish

• Complete your feedback form

• Send us additional thoughts

• Invite a colleague to a session

Contact us

ONLINE
www.ukpowernetworks.co.uk/internet/en/contact-us

TWITTER
www.twitter.com/UKPowerNetworks

PHONE
General Enquiries 0845 601 4516
Connection Enquiries 0845 234 0040

If you want to find out more, or attend future events please email us @ stakeholder.engagement@UKpowernetworks.co.uk
Thank you