



## Background

### *Electricity market reform*

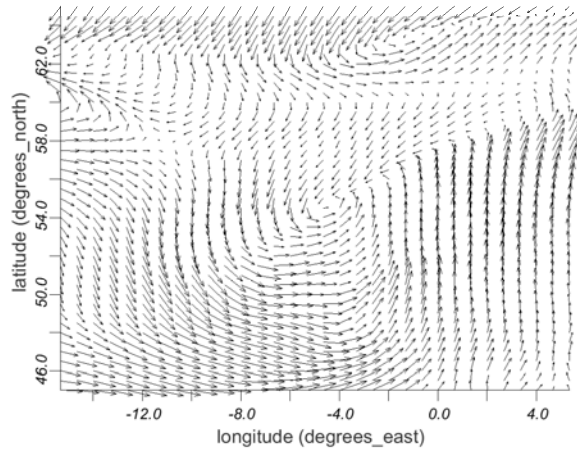
- GB power market is about to undergo fundamental reform:
    - **Contracts for Difference – to reduce emissions**
      - Changing the way low carbon generation is incentivised
    - **Capacity mechanism – to keep the lights on**
      - Change in the way power plants earn income
      - Auction run to procure new power plants or keep existing ones online
      - Government determine the level of capacity require
      - How much capacity do we need?
- 

## Energy security

- Historically security measured by a “Derated Capacity margin”
  - Not easily adapted to allow for generators with correlated output eg. wind. This requires a probabilistic approach.
  - Three main sources of uncertainty
    - **Demand variation**
    - **Power plant outages**
    - **Intermittent generation**
-

## Understanding wind uncertainty

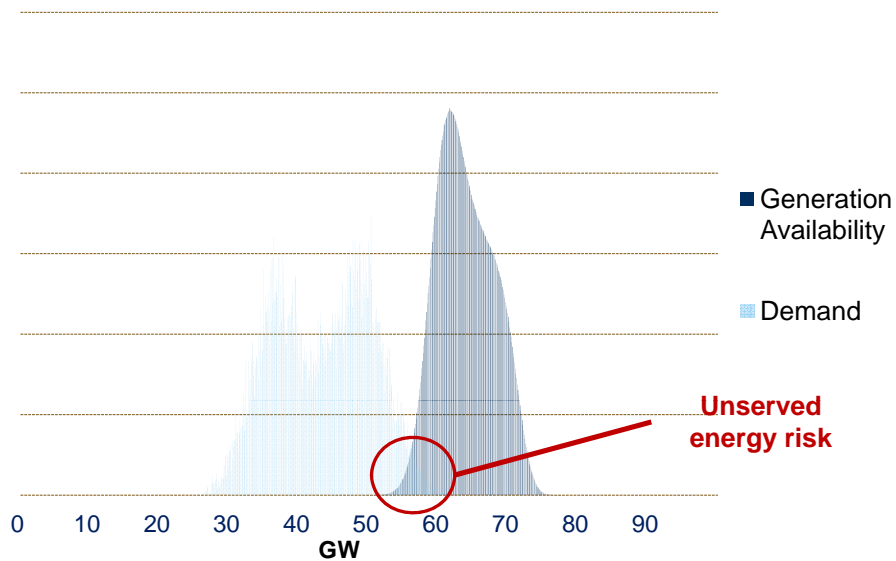
- Challenges of wind modelling output:
  - Changing wind fleet
  - Geographical correlation
  - Varies with turbine height
- Solution: NASA MERRA data



5

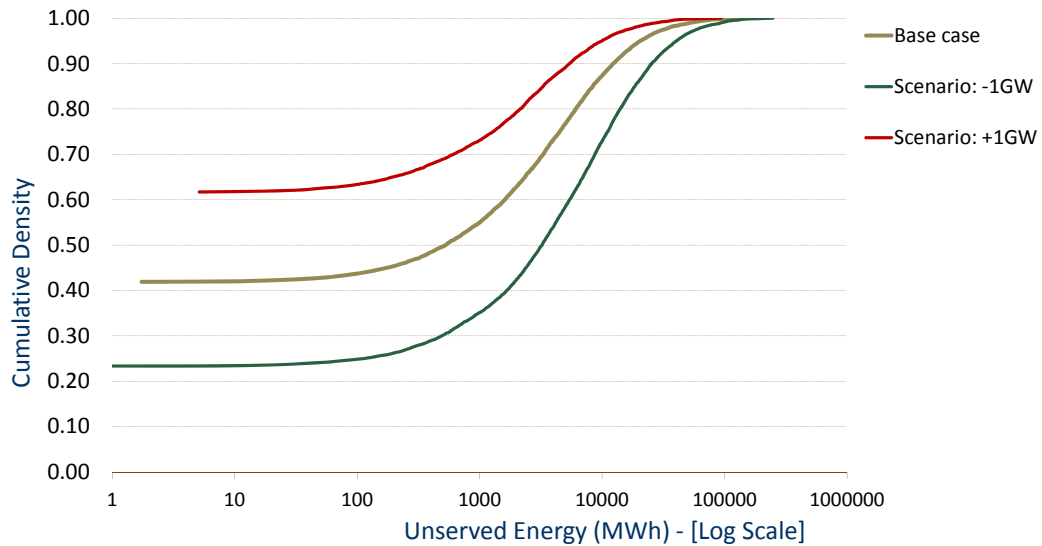
## Model outputs

*Distribution of demand and generation*



6

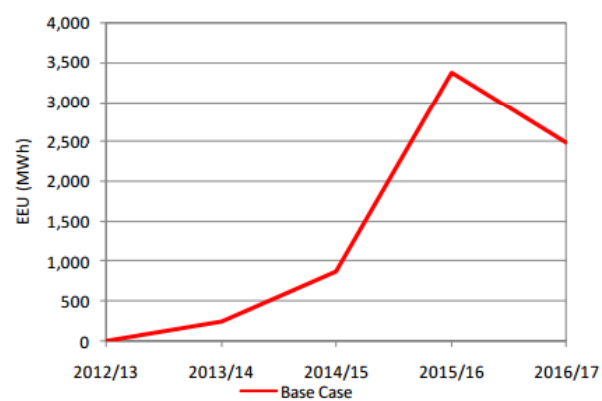
## Distribution of unserved energy



7

## Conclusions of the modelling

*Are the lights going to go out?*



How secure should we be?

Source: <http://www.ofgem.gov.uk/Markets/WhlMkts/monitoring-energy-security/elec-capacity-assessment/Documents1/Electricity%20Capacity%20Assessment%202012.pdf>

8

## Scope

- This generic presentation should not be relied upon for detailed advice or taken as an authoritative statement of the law.
- If you would like any assistance or further information, please contact the partner who normally advises you.
- While this document does not represent our advice, nevertheless it should not be passed to any third party without our formal written agreement.

LCP is part of the Alexander Forbes Group, a leading independent provider of financial and risk services. Lane Clark & Peacock LLP is a limited liability partnership registered in England and Wales with registered number OC301436. LCP is a registered trademark in the UK (Regd. TM No 2315442) and in the EU (Regd. TM No 002935583). All partners are members of Lane Clark & Peacock LLP. A list of members' names is available for inspection at 30 Old Burlington Street, London, W1S 3NN, the firm's principal place of business and registered office. The firm is regulated by the Institute and Faculty of Actuaries in respect of a range of investment business activities. Locations in London, Winchester, Belgium, Switzerland, the Netherlands, Ireland and the UAE.