

**The Actuarial Profession**  
making financial sense of the future

**Environmental Change: Opportunities for Actuaries**  
Ian Smyth and Tom Porter



## Contributing to the Energy Debate

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### Why – do we need to contribute?

- GB Electricity - £200bn of investment in 10 years
- Uncertainty e.g.:
  - Decarbonisation vs security of supply vs affordability
  - Electricity Market Reform
  - Liquidity
- Volatility e.g.:
  - Capital – scarcity and cost
  - Commodity prices
  - Demand forecasts
  - Carbon prices

**The world is getting riskier but the light must stay on**

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1

## What – would we contribute?

- The general challenge:
  - Massive capital investment
  - Long term decision making
  - Multiple variables
  - Complex relationships
- Specific answers will require:
  - Stochastic analysis
  - Long term forecasting
  - Valuing uncertain cashflows
  - Quantification of risk

**Enhancing gut feel with science**

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2

## How – are we contributing?

### Case Study:

- Modelling for the Department of Energy and Climate Change
- Stochastic model of UK power generation from 2011 to 2050
- Analysing the impact of policy on investor behaviour
- Forecasting
  - Emissions
  - Policy costs
  - Probability of blackouts
  - Consumer prices

**Quantifying uncertainty in decision making**

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3

## When – will our contribution be needed?

- |  |      |
|--|------|
| • Capital Requirements Directive             | 2012 |
| • Carbon Price Floor                         | 2013 |
| • Emissions Performance Standard             | 2013 |
| • Government backed Contracts for Difference | 2014 |
| • New capacity mechanism                     | 2015 |
| • Renewable Obligation Certificates          | 2017 |

**The opportunity exists now and stays around for a long time**

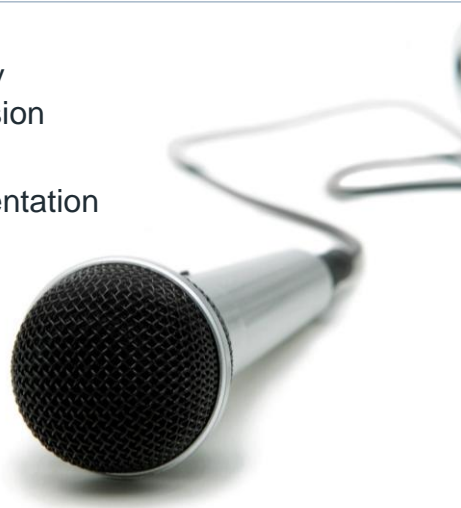
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4

## Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

The views expressed in this presentation are those of the presenters.



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5