ofgem Promoting choice and value for all gas and electricity customers

Demand Side Response Discussion Paper

Demand Side Working Group

7 September 2010

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Context and Scope

Context

- Role of DSR highlighted in Discovery, Energy Market Assessment, Smart Smart Grid Roadmap and Low Carbon Transition Plan.
- DSR can help facilitate a more dynamic relationship between supply and demand.

Scope

- Electricity sector and shifting demand.
- Reviewed current response in GB, identified issues to increase DSR and analysed benefits and costs.
- Focus of today's presentation is on latter two.

Issues we need to consider to increase DSR

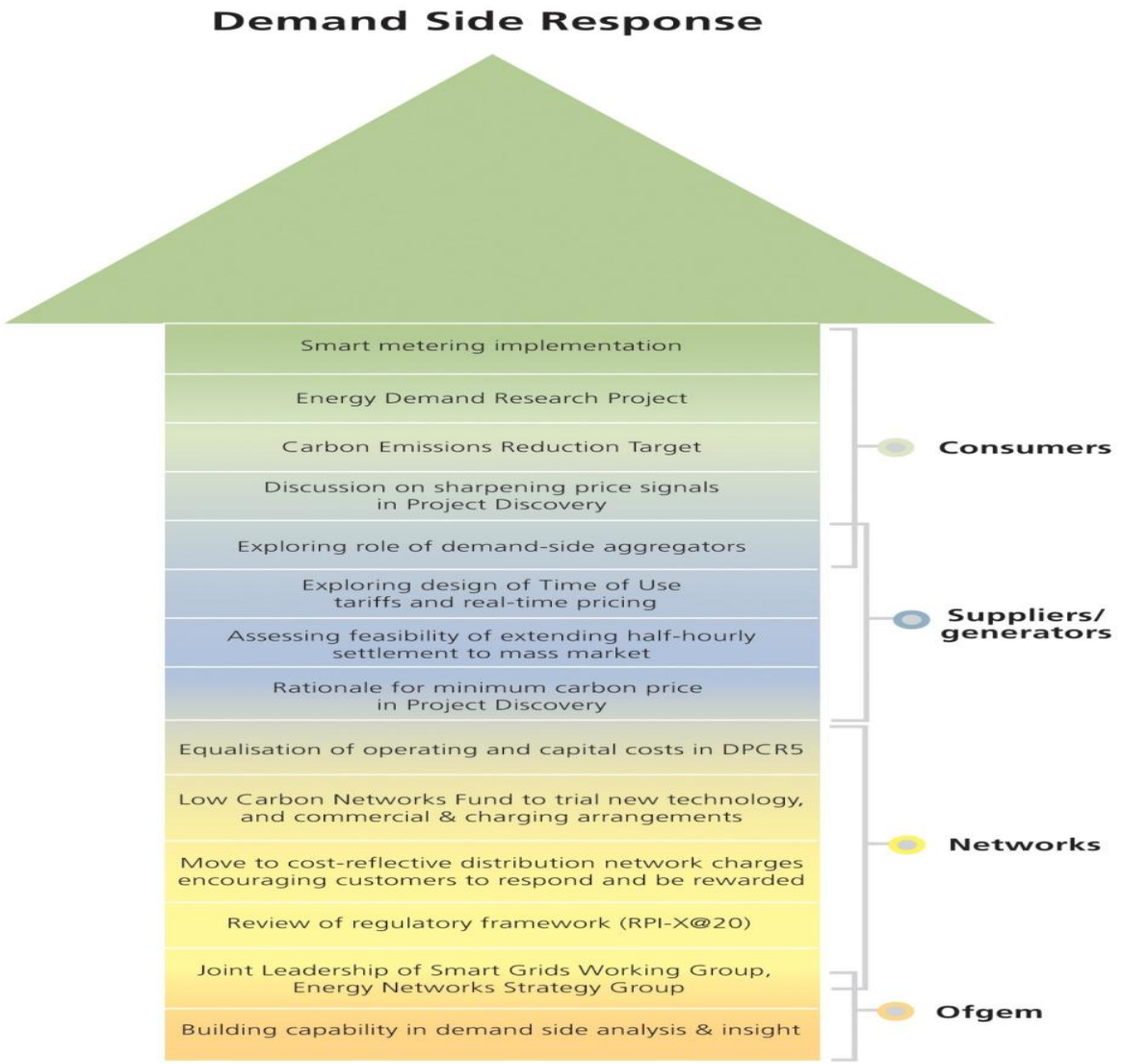
Consumer Issues

- **sharpening short-term price signals** for industrial consumers.
- addressing **limited financial incentives** to shift consumption.
- **improving awareness** for domestic and small business consumers.
- overcoming **difficulty in changing consumer behaviour and increasing discretionary demand** through **emerging automated technologies**.

Industry Issues

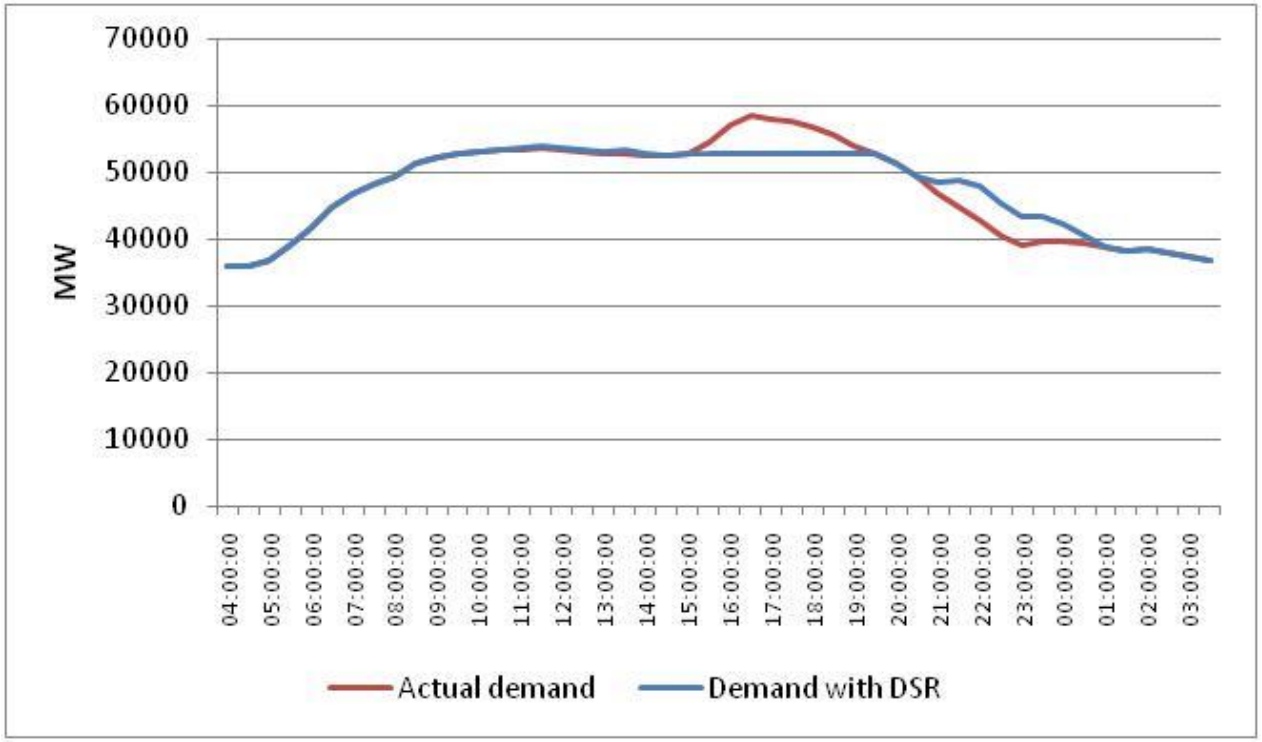
- need for **DSR from consumers to be firm and aggregated.**
- need for a **more active role for networks**.
- addressing **barriers for suppliers in offering products** .

Ofgem initiatives to facilitate Demand Side Response



Benefits and Costs

Estimated impact of encouraging consumers to shift 5-10% peak electricity use to earlier and later in the day:



Costs: largely one-off and include **technology and infrastructure costs** as well as **costs and inconvenience of changing consumption patterns.**

Benefits: estimates of **daily wholesale cost and carbon savings and annual capital costs savings for networks and new generation** and qualitatively discussed **impact on security of supply**.

Assumptions

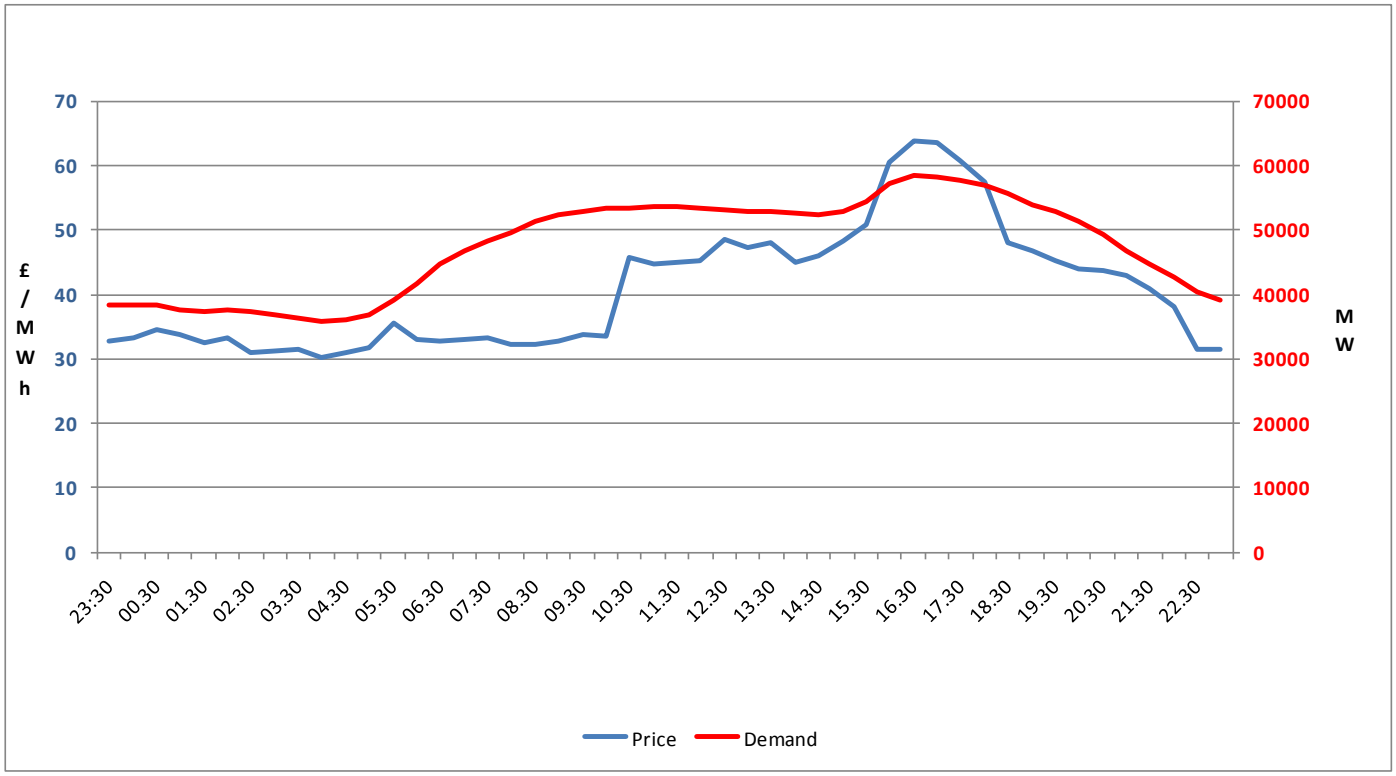
1. Enabling technologies to facilitate DSR and tariffs that encourage DSR are available.
2. No net change in electricity demand as a result of DSR.
3. Used demand profiles for 2 winter days and 1 autumn day.
4. Potential for around 5 to 10% of total peak demand to be shifted within day.

Customer	% peak demand	DSR potential	% peak demand with DSR	Time period	
				From	To
Interruptible I&C	3.8%		3.8%		
Firm I&C	16.0%	-5.0%	15.2%	15:30-19:30	11:00-15:00
SME	30.2%	-5.0%	28.7%	15:30-19:30	21:00-01:00
Domestic	50.0%	-5% to -15.0%	42.5% to 47.5%	15:30-19:30	21:00-01:00
Total	100.0%		90.2% to 95.2%		

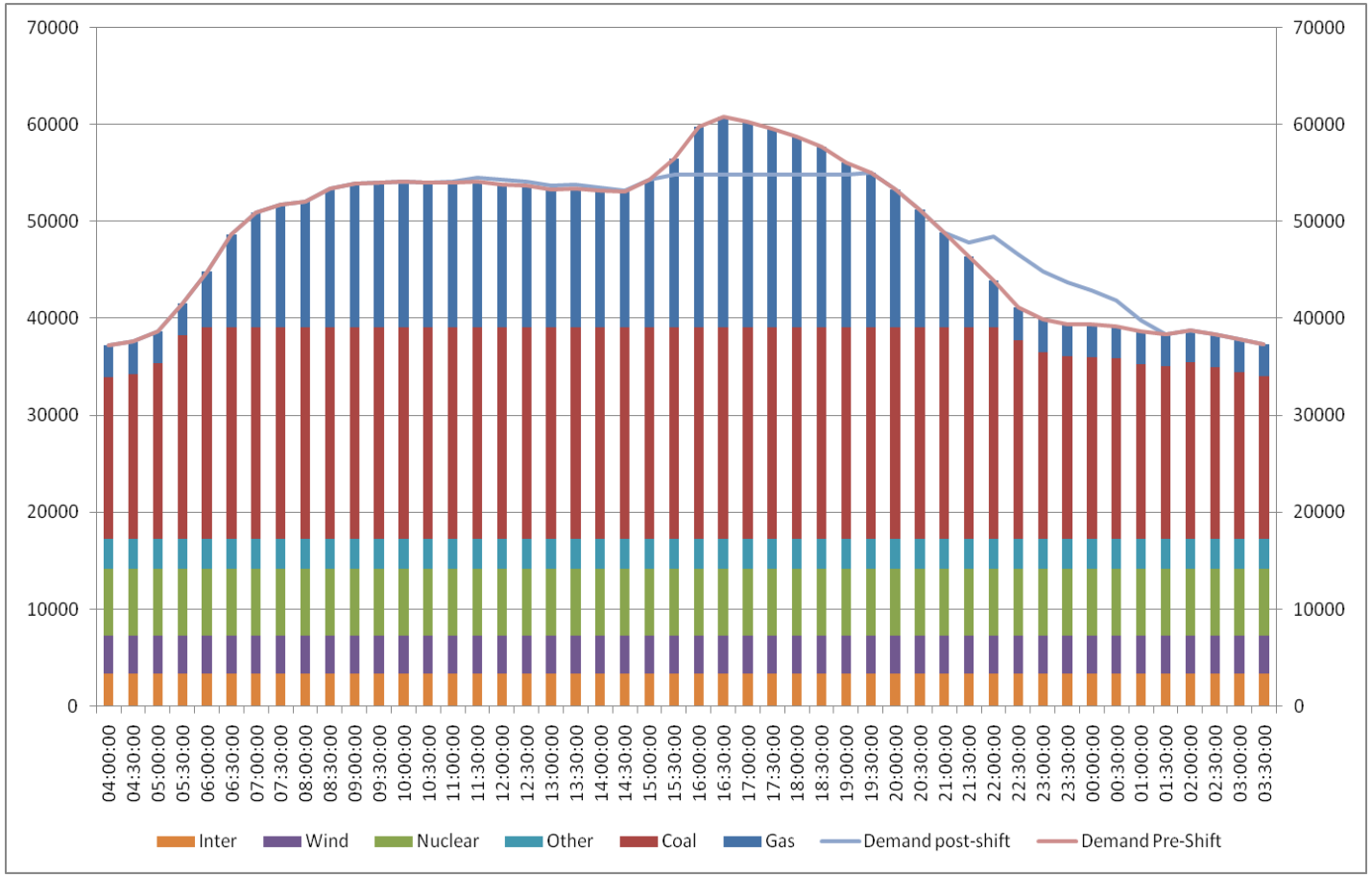
Wholesale cost savings

Wholesale cost savings arise due to replacing higher cost peak generation by lower cost off-peak generation- combination of short run cost savings and capital cost savings.

Wholesale prices and daily demand profile 7/01/10



Modelling wholesale cost savings

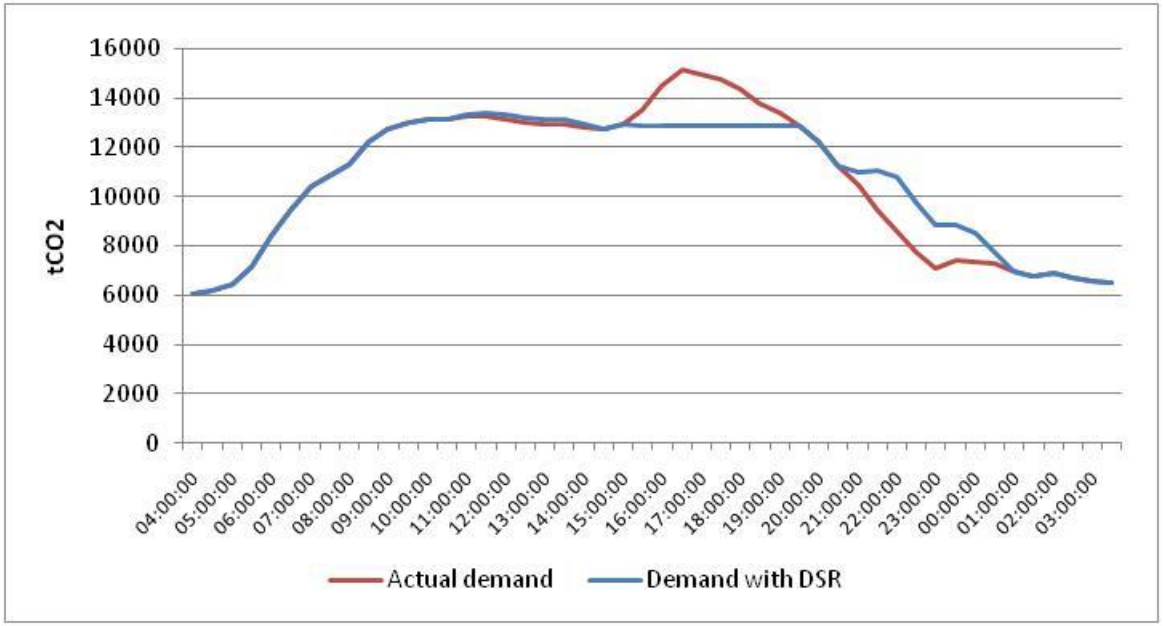


- Plant stacked in order of SRMC
- Order may change as commodity prices change
- Capital cost savings accounted for separately

Daily wholesale cost savings b/w £0.4m and £1.7m, and annual capital cost savings b/w £129m and £536m.

Change in daily carbon emissions

Changes in carbon emissions depend on carbon intensity of generation plant used to meet demand.



There may be a net increase or decrease but **if carbon is priced appropriately DSR can lead to CO2 savings.**

Daily carbon savings (baseline scenario): -850tCO2 to 2200tCO2

Daily carbon savings (sensitivity analysis: decrease gas price, increase carbon price): 800tCO2 to 2550tCO2

Annual reduction in network costs

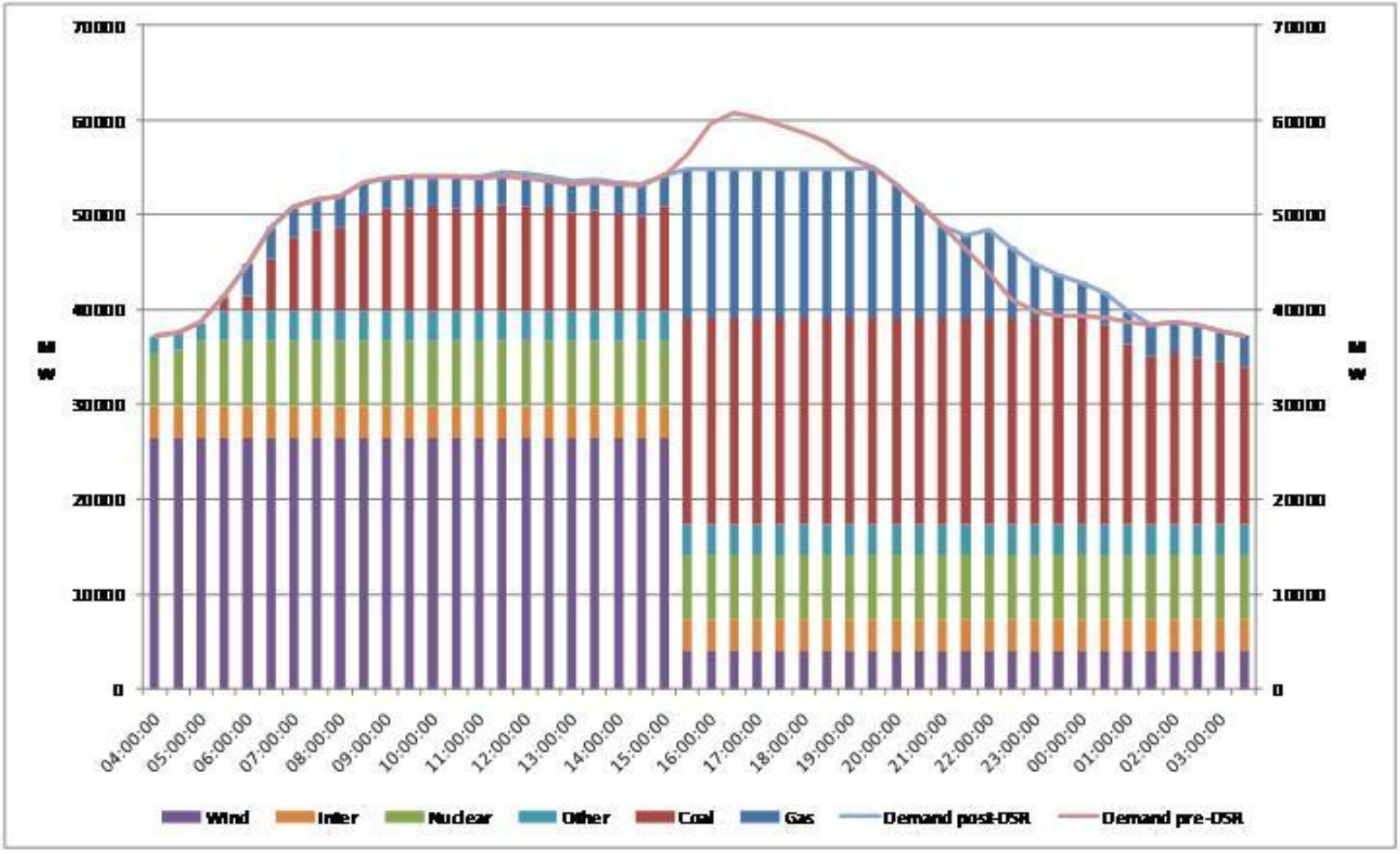
DSR can be used to defer network investment such as reinforcement.

Distribution Network (2007-08 prices)	
Annual average general reinforcement investment (2010-15)	£275m
Potential annual savings with a 10% reduction in peak demand	£27.5m
Potential annual savings with a 5% reduction in peak demand	£13.8m

- These estimates are conservative:
  - assumes a 1:1 relationship between reduced peak demand and investment; and
  - does not include investment for connections of generation plants.
- We might also expect some transmission network savings.

Security of supply

DSR will become increasingly valuable as variable generation increases, helping to promote secure and sustainable energy supplies.



DSR in a potential 2020 generation mix – managing wind variability

DSR discussion paper:
http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=39&refer=Sustainability

Thanks for listening

Any Questions?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