



# Cross-party impacts of DSR actions

Presentation of findings to WS6

20<sup>th</sup> May 2014

ELEXON asked us to investigate cross-BSC party impacts of DSR actions...

1

What are the impacts of DSR on different parties?

2

What interventions could be undertaken to improve the use of DSR?

3

What is the potential scale of the impacts, and the benefit of implementing the options?

4

What are the implications for industry and ELEXON?

...and so be better informed to consider BSC amendments and implications for the industry and ELEXON

# We considered the problems of DSR use by three parties

Suppliers



DNOs



SO



Minimise wholesale electricity costs / avoid imbalance charges

Minimise network reinforcement costs

Balance the system at least cost

Information problems

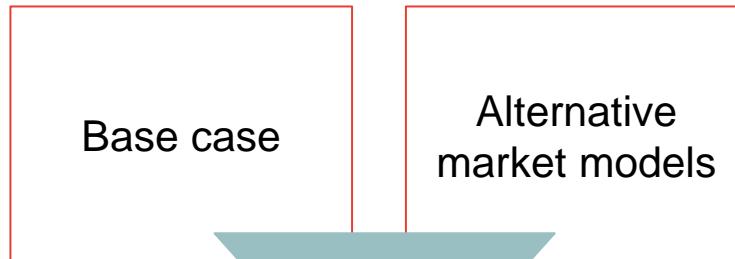
DSR actions by one party may harm others in the supply chain if the actions are unsighted

Inefficient use of DSR

Because DSR has the potential to be of value (or detriment) to different parties at different times, there may be barriers to ensuring the efficient system-wide use of DSR.

# We have developed a model to investigate the cross-party impacts...

It is a complex half-hourly despatch model of DSR...



**Outputs:**

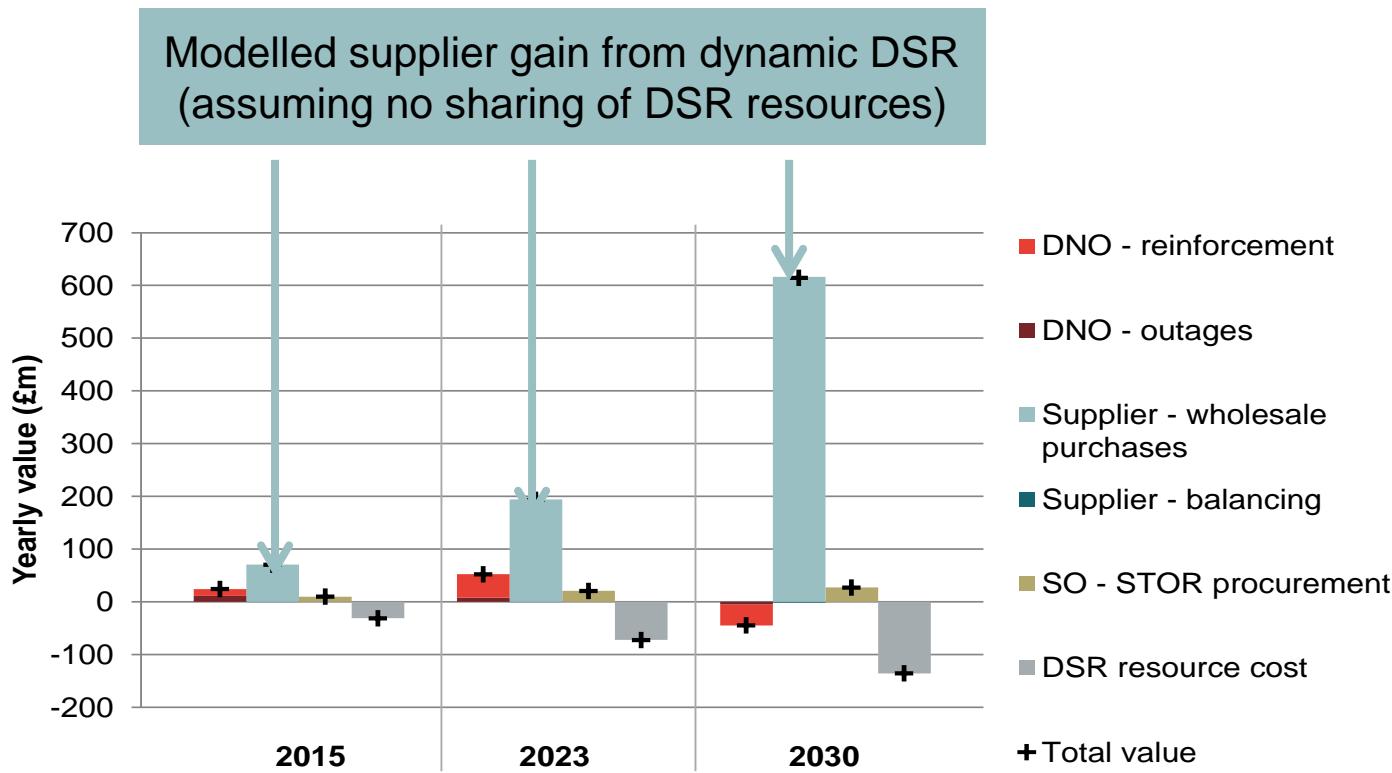
- Costs for different parties
- DSR usage and DNO investment decisions
- Load profiles post-DSR

...but we also recognise its limitations

- We reviewed the literature and spoke to industry experts.
- We have also made a number of simplifying assumptions which are important drivers of some of the results. For example, the allocation of DSR resources between parties, and wholesale and cash-out prices.
- Further, in our market models we have abstracted away from contractual complexities to identify potential value.

...and identify the drivers of DSR value under different market models

# Suppliers are likely to be the biggest beneficiary from the use of DSR, to reduce their wholesale costs...



...and the impact of DNO and SO DSR only has a very small impact on suppliers

# We considered a range of new market models that could support DSR use

## Market models

### Supplier to supplier trading



- There is the potential for supplier wholesale and balancing costs to be reduced through trading of DSR pre-gate closure.

### DNO and SO sharing



- Sharing can reduce inefficiencies and could take a number of different forms e.g. with central roles for the DNOs, the SO or aggregators.

### Central market platform



- A central market brings together the wholesale and ancillary markets for DSR, and could take a variety of different forms.

# Supplier to supplier trading can be beneficial for small suppliers in particular...

## Sources of benefits to small suppliers

- Pooling imbalance accounts allows suppliers to net off their position, taking advantage of a more diversified customer base

- Suppliers facing an imbalance can call on DSR resources from other suppliers

- Gains from an illustrative “case study” modelled at 35% of imbalance costs or 0.2% of wholesale costs.
- Larger suppliers are unlikely to benefit given the diversity within their own customer base.

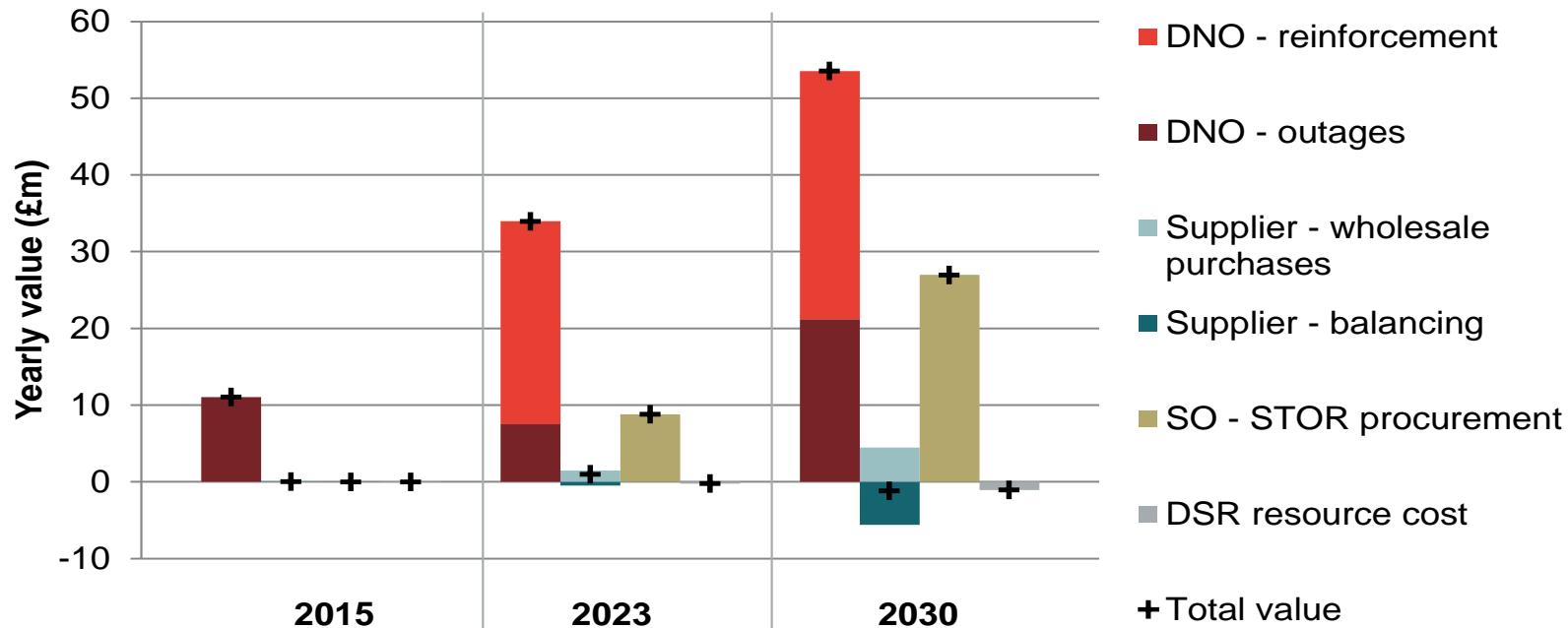
## Effect on the market as a whole

- System-wide imbalances remain the same – costs will be borne by suppliers outside the “club”

- Has the potential to reduce system-wide imbalances through more efficient use of DSR

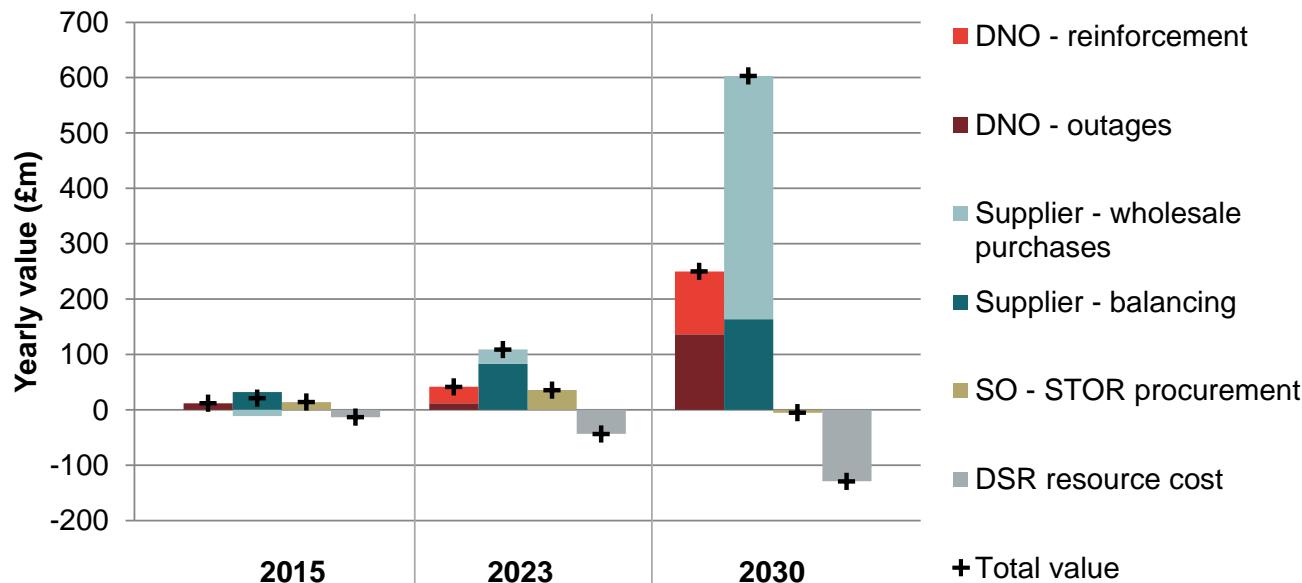
... but the benefits are modest

# The modelling demonstrates gains to both the DNO and SO from the sharing of DSR



- This result is the direct corollary of the small impact that DNO DSR has on supplier imbalance volumes.
- Because we have assumed that at any time only 1% of the distribution network is at fault there is likely to be a high proportion of DNO contracts available to the SO for STOR.
- The balance of availability and utilisation payments for DSR in future is important for the potential scale of benefits from “sharing”.

# A central market platform may lead to benefits in a world with high and inefficiently allocated DSR



Benefits of the market are higher if...

- There is a higher potential for DSR
- DSR capabilities in the absence of a market are not allocated to those parties that hold the most value
- DSR can be shared between parties, and has the potential to cause conflicts which a market can help resolve

# Insights from this work

## Suppliers

- Suppliers have the highest potential to capture DSR value.
- Impacts on imbalances are likely to be low and so any BSC changes are unlikely to be proportional to benefits.
- Modest gains from trading DSR and there are no current BSC barriers.

## Network owners/SO

- There is potential value in “sharing” of DSR between DNOs and the SO. Further work could investigate:
  - the most appropriate contracting structure to realise these benefits;
  - the services required for verifying, settling and holding DSR contract information.

## Industry as a whole

- There are many uncertainties and challenges associated with a central market but it is worthy of further investigation.
- Further work needs to investigate:
  - the challenges of combining national wholesale and local balancing markets for DSR;
  - in the absence of a central market how best to ensure efficient allocation of DSR.



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FRONTIER ECONOMICS EUROPE LTD.  
BRUSSELS | COLOGNE | LONDON | MADRID

Frontier Economics Ltd, 71 High Holborn, London, WC1V 6DA  
Tel. +44 (0)20 7031 7000 Fax. +44 (0)20 7031 7001 [www.frontier-economics.com](http://www.frontier-economics.com)