SP ENERGY NETWORKS

Distribution System Operator (DSO) 2012 to 2023

Price Control Review Forum

3rd December 2012

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Distribution System Operator (DSO) in ED1

Current work to define DSO

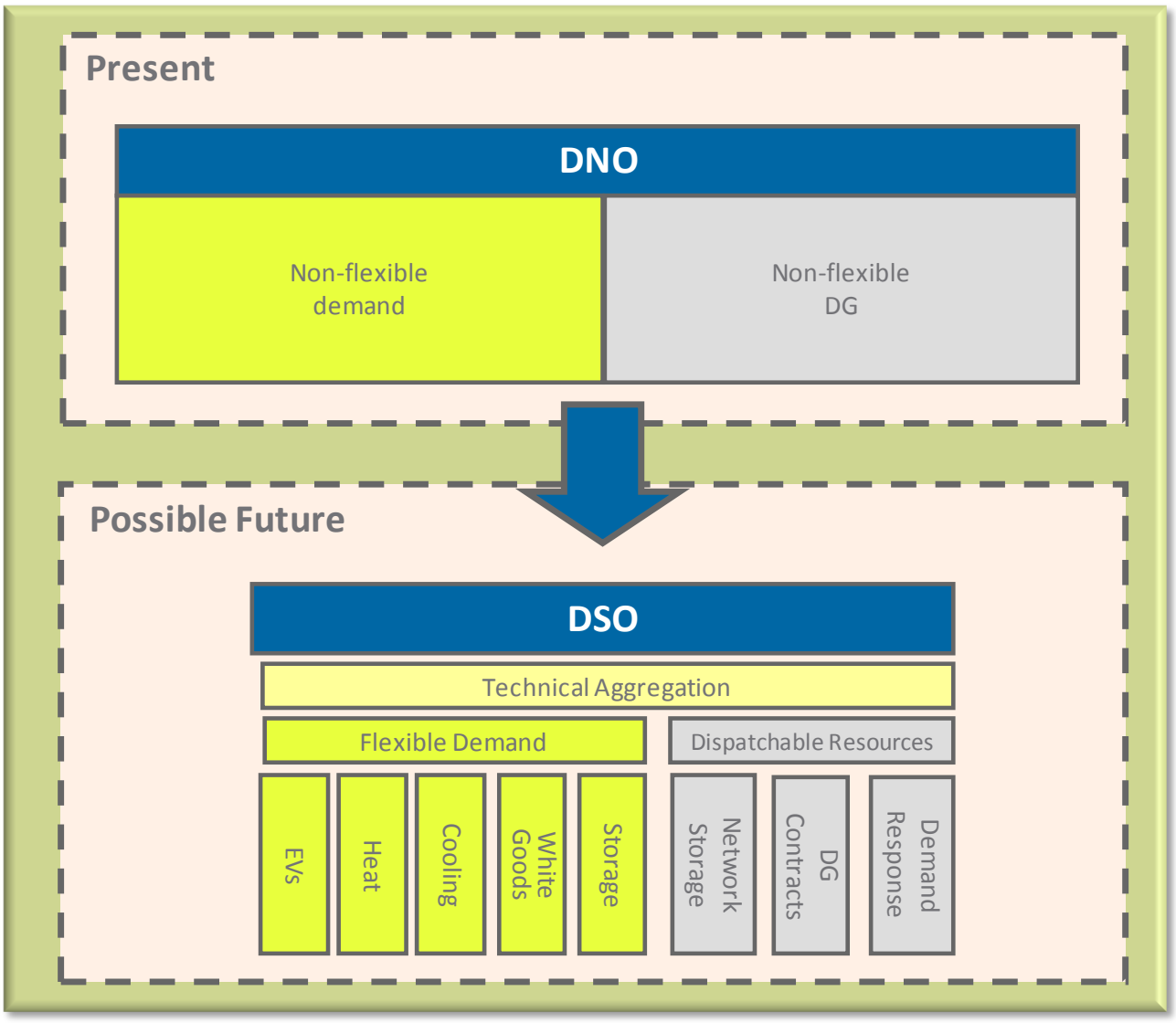
The drivers for a DSO

Current market mechanisms

Possible ED1 DSO vision

Some DSO questions for discussion

Potential DSO roles are broad and varied



INDUSTRY WORK

RIIO-ED1 Flexibility & Capacity Work group

Smart Grid Forum Work Group 6

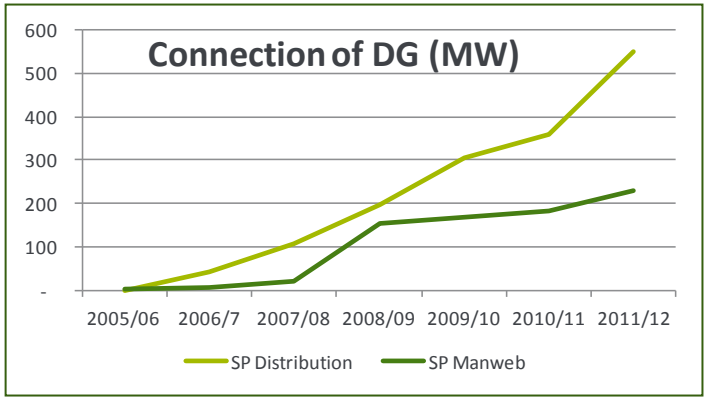
Transmission System Operator - Demand Side Response workshops

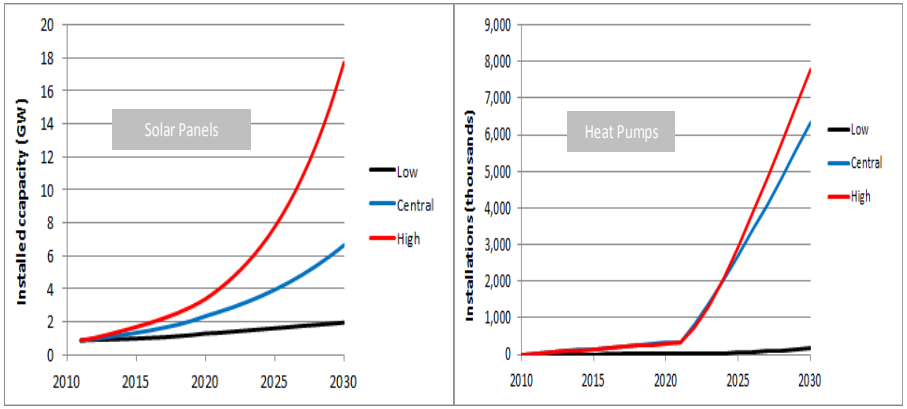
Low Carbon Network Fund trials of specific components

ED1 package needs sufficient flexibility to enable DSO solutions to be implemented

Drivers for Distribution System Operation

Penetration of intermittent renewable generation throughout the network





Customer uptake of low carbon products uncertain and likely to happen regardless of network capacity

What our current stakeholders tell us

‘offer independent & comprehensive energy advice’

‘connect us quickly without lengthy and expensive reinforcements’

Traditional solutions unsustainable – active balancing will be needed at LOCAL LEVEL

Current market mechanisms

Product	Issue
Energy prices	Primary driver for existing Demand side response products (e.g. off peak heating) – Supplier driven DNO network charges typically small component
Transmission network balancing	Primary driver for aggregators & large generators Predominantly gas & diesel generation (STOR) Value far in excess of DNO network costs
Contractual relationships	Primary contract with Supplier DNO agreements with larger customers only
Energy efficiency initiatives	Suppliers have implementation responsibilities No link to network requirements

Limited customer price signals related to DNO locational and/or time of use charges

Timing of local DNO network constraints vary across network and can differ from transmission

Distribution system operation specific products are necessary

Possible ED1 DSO Vision (medium term to 2023)

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Products by customer type	Potential issues
EHV & large HV Generators • Agreements to match output to network (dynamic thermal ratings) • Contracts to commit to availability	• How to avoid locational charge penalties? • Can DSO product £ > TSO products £
EHV & Large HV Demand • Locational pricing • Bilateral agreement with technology	• Are payments based on avoided costs sufficient? • Could additional payments be created by accessing transmission balancing products?
Small HV & Large LV • Time of use pricing to suppliers • Bilateral agreement with technology • Technology, e.g. storage, automation	• Will DNO time of use pricing affect behaviours? • Could additional payments be created by accessing transmission balancing products? • Should DNOs facilitate market for storage?
Small LV • Time of use pricing to suppliers • Technology, e.g. storage, automation • Leverage supplier efficiency activities	• Should DNOs have direct customer agreements? • Will DNO time of use pricing affect behaviours? • Greater DNO role in energy efficiency? • Should DNOs own storage?

The ED1 package needs sufficient flexibility to enable DSO model to develop

Some DSO questions for discussion

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What should the DSO : TSO relationship be?

Could DSO products be enhanced by accessing transmission products? (e.g. STOR – short term operating reserve)

Should DNOs own storage or facilitate a market for it?

Should direct customer contracts be used more widely?

Should DNOs have a greater role as independent energy experts?

The ED1 package needs sufficient flexibility to enable DSO model to develop