

Storage and the regulatory framework

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Background

- Under original ToRs, WS6 looked at barriers to the use of smart grid solutions, including storage, during the RII0-ED1 price control period.
- The aim was to understand how DNO ownership of storage fits into current regulatory framework.
 - Identify barriers to DNOs investing in storage where efficient and propose options for enablers if required
 - Identify if there is a need for new regulatory arrangements in response to DNO ownership of storage and propose options if required
 - Make recommendations to the SGF for next steps
- WS6 August 2012 report provided some insights and further work required on storage, including a list of questions to be answered.
 - The questions are picked up in these slides.

Key regulatory principles

- Ofgem is technology neutral and does not favour certain types of solutions over others.
- RIIO framework is focussed on outputs not inputs.
- Therefore if storage is an efficient way of delivering outputs, we want DNOs to be able to use it.
- All parties (DNOs and third parties) should operate on a level playing field.
- Impact of use of storage on system cost (eg balancing costs) should be passed on to party best placed to control them.
- DUoS customers should not bear disproportionate risk where storage is used to provide services to third parties
- Operation of storage should be consistent with EU legislation

The regulatory framework

- EU Third Package more important than initially thought.
 - Designed to separate supply, generation and network operations and break up big vertically integrated companies.
 - Prevents DNOs having control over generation or supply activities.
 - There is a risk that storage is classed as generation under the directive and that licence exemptions do not apply to DNOs under the directive.
 - DNOs would not be able to have control over supply, the sale of electricity to wholesale or end customers.
 - Little scope to change in short term.
- De Minimis restrictions set 2.5% limit on investment in non-regulated assets, and associated revenues.
- Revenues treated differently between DPCR5 and ED1.
 - DPCR5 arrangements: Treated as an excluded service – DNOs allowed to retain revenues to cover costs and a reasonable margin
 - ED1 arrangements: revenue shared according to efficiency incentive sharing factor

High level models for DNO ownership of storage

- Following slides show 3 high level models for DNO operation of storage.
- There may be many different business models and commercial arrangements possible for each of these.
 - LCNF project learning will feed into understanding of these.
- What barriers do current regulatory arrangements and legislation pose?
- What may need to change in future arrangements?
- Are there any models not covered by the following 3 slides?
- Which model(s) are preferred?
- Which model(s) are not viable/suitable?

1) Regulated asset, no additional revenues



Charging options:

- Take electricity off network
- Contract with supplier to purchase electricity
- Buy electricity directly from market

Discharging options:

- 'Spill' electricity onto network

Are there any barriers from current regulations?

Are any new regulatory arrangements required?

- Transparency arrangements to notify SO/suppliers of any off-take and spill in operation of storage.
- Arrangements to reflect costs imposed on system of operating storage.
 - Would DNOs currently have to register storage assets as BMUs to charge and discharge storage?
- Is there a maximum size of storage asset over which spilling should not be allowed?

2) Regulated asset, revenues from third parties renting use of storage or from providing services

Implications of regulations:

- Third package requires control of 'supply' to be separate from control of the distribution business.
- Arrangements to share revenues between DNO and DUoS customers.



Charging options:

- Take electricity off network
- Enter into a supply contract
- Buy electricity directly from market

Discharging options:

- Enter into a contract with a third party to manage interaction with market(s)

Are there any barriers from current regulations?

Are any new regulatory arrangements required?

- Perception that regulated monopoly provider can better underwrite risk of investment. Does this distort the market?

3) Non-regulated asset

Implications of current regulations:

- De Minimis limit of 2.5% on investment made.
- De Minimis limit of 2.5% on revenues generated.
- Third package requires control of 'supply' to be separate from control of the distribution business.



Charging options:

- Take electricity off network
- Contract with supplier to purchase electricity
- Buy electricity directly from market

Discharging options:

- 'Spill' electricity onto network
- Enter into a contract with a third party to manage interaction with market(s)

Are there any barriers from current regulations?

Are any new regulatory arrangements required?

Next steps

- Get clarity on whether, under the EU Third Package, storage is classified as ‘generation’.
 - Could there be an argument that storage is not generation?
 - If we believe storage is generation, what steps can be taken?
- Draft WS6 paper on DNO ownership and operation of storage
 - Implications of Third Package – generation and supply
 - De Minimis limits
 - Revenue treatment – excluded services/sharing factor
 - Regulatory changes/ new regulatory arrangements
- Develop arrangements for SO/suppliers to have visibility of use of storage and costs to be passed on to DNOs (if DNOs ‘spill’ electricity)
 - This work is being taken forward by WS6 under current terms of reference.
- UKPN’s Smarter Network Storage project and other LCNF projects trialling different commercial arrangements for storage will provide learning on potential commercial models.

Appendix – further ownership models

- UKPN's Smarter Network Storage LCNF project has consulted on a range of potential models for DNO and third party ownership of storage.
- Following slides look at each of these in turn, taking account of barriers discussed in previous slides to better understand implications for real-world business models.

1) DNO merchant

- DNO owns and operates asset
- DNO has full operational and commercial control
- DNO trades in markets directly
- DNOs and/or DUoS customers could be exposed to commercial risk

Implications of current regulations:

- Third package requires control of 'supply' to be separate from control of the distribution business.
 - Prevents DNOs taking on merchant role.
- Excluded services arrangements would limit revenues.

Is this option allowed under current legislation?

Are there any other barriers?

2) DNO contracted

- DNO owns and has operational control over asset
- Third party is contracted to take commercial control and trade in competitive markets outside of time windows when needed for network purposes
- Different contracts possible between DNO and third party – fixed rent, share of commercial revenues etc.

Implications of current regulations:

- Third package requires control of ‘supply’ to be separate from control of the distribution business.
 - Appears to be possible in this case but DNO would need to demonstrate compliance.
- Excluded services arrangements would limit margin DNO is able to make on revenues.

Is this option regulatory and financially viable?

Are there any other barriers?

3) DSO

- DNO owns and operates asset
- DNO has full operational and commercial control
- DNO coordinates portfolio of 'flexibility' for distribution and system benefit
- Exposure to commercial or incentive risk dependent on regulatory framework

Current regulations do not fully take account of DSO role – the implications of DNOs moving to a DSO role will be explored through WS6

European and GB regulations and legislation may have to be amended to allow DNO to take the DSO role.

Can return to this option once roles and implications better defined.

4) Contracted services

- Third party owns and operates storage asset.
- DNO enters long term contract with third party to provide constraint management service.
- Commercial risk would have to be appropriately shared between DNO and third party
- DNO exposed to risk that flexibility will not be available when required

Is this option viable?

Are there any operational constraints on this model?

Are there any regulatory barriers to third parties taking on this role and DNOs entering into long term contracts?

5) Charging incentives

- DUoS charges set to create incentive for peak shaving reflecting value of avoided reinforcement
- DNO exposed to risk that flexibility will not be available when required

Is this option viable?

Are there any operational constraints on this model?

Are there any barriers to these arrangements and third parties taking advantage of charging incentives?

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