



ERP Plenary

January 2016



Barriers to Energy Storage

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January 2016



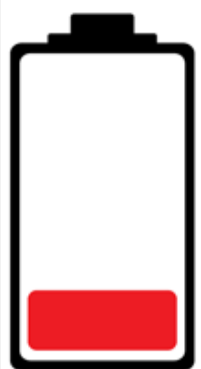
Recap / comparison

- **ERP Energy Storage report - 2011**
 - Considered role of ES
 - set out nature and scale of challenges
 - Innovation landscape / tech. dev focus
- **ERP Energy Storage report - 2016**
 - overview of **barriers** to Energy Storage / solutions
 - “light-touch” technical focus
 - draw together aspects from other ERP projects
 - Use-cases
 - **Scope: electrical, thermal + hydrogen + gas + other???**

WHOLE SYSTEM (VALUE OF ES)

TECHNICAL

FINANCIAL
COMMERCIAL
REGULATORY
POLITICAL
LEGAL
SOCIETAL



LESS

2016 FOCUS

MORE



Existing work to draw on & Use-Cases

- **General work to draw on:**
 - LCICG ES TINA, EU Parliament, Ofgem, Gratham Institute, Frontier Economics, Brattle Group etc.
- **Existing ERP projects of relevance:**
 - Hydrogen, Transport, Cities, Community Energy, Smart Energy, Managing Flexibility
- **Existing work with use-cases:**
 - DECC's Smart Energy Team
 - Carbon Trust + 3 utilities + DECC + Scot Gov.
 - Carbon Trust, DECC + Imperial "Least Regrets" modelling
 - California case study



California Project Example – with use-cases

| Storage Grid Domains | Regulatory Function | Use-case examples |
|------------------------|---------------------------------|--|
| Transmission-Connected | Generation/Market | <ul style="list-style-type: none"> - (Co-located Energy Storage) - Concentrated Solar Power - Wind+Energy Storage - Gas Fired Generation + Thermal Storage |
| | Transmission Reliability | <ul style="list-style-type: none"> - Stand-Alone Energy Storage - Ancillary Services - Peak Shaving - Load Following |
| | Distribution Reliability | <ul style="list-style-type: none"> - Voltage Support - Substation Energy Storage |
| Distribution-Connected | Generation/Market | <ul style="list-style-type: none"> - Distributed Generation + Energy Storage |
| | Dual-Use (Reliability & Market) | <ul style="list-style-type: none"> - Distributed Peak |
| Behind-the-Meter | Customer-Sited Storage | <ul style="list-style-type: none"> - Bill Mgt/Permanent Load Shifting - Power Quality - EV charging |



Timeline, & Steering Group Support

- **Timeline:**

- Approval of PID by ERP membership: **Jan 2016**
- Scoping Workshop: **Feb/March 2016**
- 70-80% project completion: **July 2016**
- Publication & Dissemination: **Sept/Oct 2016**

- **Steering Group:**

- Chair: Peter Bance, Origami
- SG Members: Keith MacLean (ERP), Atkins, SSE, GE, DECC, Ofgem, ScotEnt, National Grid, Carbon Trust, FSB



Member input & discussion

- Project Initiation Approved?
- Thoughts re scope & use-cases?

Project Aims & Impact:

- ***Identify barriers & possible ways to overcome them***
- ***Provide clarity for: policy-makers, regulators, network operators, customers, investors & ES developers (tech & supply chain developers) to help:***
- ***Catalyse & mobilise an ES supply chain of value to the UK***

THANK YOU!

For discussion:

1. ERP response to the re-setting of Energy Policy
2. ERP's future structure & future role