

Future of Energy Utilities Project

NB: Please complete this form with support from Steering Group & Project Chair – the draft PID should be presented and discussed at the first Steering Group meeting, particularly the sections on Comms, Impact & Dissemination. Ensure Project PIDs are always saved on the ERP shared drive.

Overview

This project will develop future scenarios for the UK centralised energy utility business model. These scenarios will be used to test the capacity of utilities to respond to systemic risks. This project will deliver new insight into the financial implications, policy responses and corporate strategy needed to negotiate the increasingly unstable operating environment for centralised utilities.

Context (background)

The “Big Six” centralised utility model is under threat: (1) competition from decentralised generation; (2) Fragmentation of the centralised generation market (3) increasing costs of capital; and (4) political risk. Supply businesses face: (1) eroding market share; (2) increasingly complex demand side challenges; and (3) diversifying competitive pressures. The role of transmission and distribution actors will not form a core part of this work but will be considered to some degree as deemed appropriate relative to the core project needs.

The UK and other OECD nations rely on these utilities for energy security, there are no credible, economically efficient and systems based projections that envisage a complete phase out of large scale firm generation. Can a market without large scale centralised energy utilities deliver requisite firm generation capacity. Energy scenarios across the OECD show transmission level generation remains critical to system reliability, and in many nations transmission level generation has relied on a vertically integrated model to survive in the market. For most liberalised systems, including the UK, this means private utilities are likely to remain important to system stability, even as this vertically integrated business model is under increasing pressure. Uncertainty in the system is continuing to grow: The UK government has: (1) reduced support for renewable energies; (2) cancelled the Carbon Capture and Storage competition; and (3) announced the phase out of Coal power by 2025. New entrants to the supply market are arriving month by month, and distributed energy systems are becoming smarter.

The work will maintain the scope, at least initially, to assess systemic issues such as the interaction with the investment community (pensions, insurance funds and other institutional investments have significant utility investments) to assess the degree of confidence that they have in investing in future energy utilities.

The challenge described above is already broadly known, what is not known is how to react. A structural response is likely to be needed from across government, business and civil society. This response must recognise the likely reliance of the electricity system on the utility model, and the long term planning this challenge requires.

Aims & objectives

Aims & Objectives of the Project Work (these are likely to be updated as the project progresses)

The aim of the project is **to assess the future operating environment of the centralised energy utility and assess its role - if at all, in what form and how it might operate in the future UK energy system.**

The work will have the following objectives:

- Seek to assess the operating environment of the UK future energy system;

- Assess the effect of the different scenarios on the business models of different energy utility typologies such as generation only and vertical integration;
- Assess the commercial and policy responses to systemic and corporate risks in the future electricity / energy sector;
- Assess affect on innovation and investment - what will go ahead/fail under different models? And
- Finally, a suite of structural responses aimed at corporate, political, and financial audiences will propose adaptive pathways for the centralised utility business model, defining new roles and value propositions for central system stakeholders.

ERP contribution

ERP's role within this project work; what is in and out of scope and any links with other ERP project work

Based in the work undertaken in the ERP Cities and ERP Horizon Scanning Projects, the Energy Research Partnership is ideally placed to bring together the relevant actors in the UK energy system to assess this strategically important issue.

Fit with other work

Due to the commercial sensitivity of this topic the openly available pieces of work for the project to draw on are limited. The recently released Energy UK `Pathways for the GB Electricity Sector to 2030 and New York City's Renewable Energy Vision outputs are likely to be most relevant from the broader literature.

There is some academic work in this area e.g. related outputs from the Realising Transitions Pathways (RTP) Consortium, Helms 2016 and Brouwer et al, 2016. The ERP has also been approached by one of the lead authors from the RTP project to collaborate on this activity to build on the work on distributed energy that was undertaken in the Thousand Flowers Scenario.

Output and Key Deliverables

What the project will deliver (e.g. summary paper, presentation, full report, an overview of existing works, a stakeholder map, a roadmap for x etc.)

The final outputs of this work will be a high level stakeholder report on the future of centralised utilities. This will be supported by the development of a forum event on utility futures and target communication of research findings to policymakers, utility managers, and the institutional investment community.

Project Impact

*Consider as part of slide park at initial SG meeting / at start of project **and** once the project has been completed.*

Proposed project impact for ERP as a whole, potential impact for Members / member orgs and wider impacts (e.g. for energy system/gov/industry or particular organisations).

With the participants involved in this project and the fact that the outputs from this work will be timely - it is therefore considered that the potential for impact will be significant. It is intended that the impact plan will be generated in the Kick-Off Steering Group meeting.

The most important desired outcome will be the generation of a strategic dialogue between UK energy system stakeholders as to the role of the centralised utility will be in the future UK energy system.

Communications & Activities

Consider comms tools and methods with a focus on impact.

What comms support (in-house and external) will be required? Consider/map who you will need to engage with to produce the work.

Plan for promotion and dissemination of project work – this includes input from SG etc to create a recipient email list. Plan who to disseminate to for maximum impact, the most appropriate tools and how to tailor outputs (if required) for specific audiences.

Project & follow-up activities should be considered at the start of the project but will require updating as the project progresses. Consider, source and record opportunities to present the work, speak at conferences, be involved in further work etc.

Target Audiences for this work to reach include:

- Policy makers in DECC and regulators in Ofgem;
- Private sector / Industry - particularly utilities, DNO's, National Grid, engineering consultancies and finance sector; and
- Distributed energy generation actors across public and private sector including local authorities and community energy project developers.

Channel(s) to reach audiences

- Direct engagement with target audiences via exchanges initiated through the ERP Cities and Foresight eco-system that will evolve during the execution of the project via meetings and report dissemination.
- In direct engagement with audiences via presentations at conferences, industry publications, media press-releases and report dissemination.

A basic mapping of the audiences, the channels to reach those audiences and the messaging to stimulate engagement for those audiences will be undertaken during the project.

Approach & Schedule

The project approach in order to fulfil the prescribed objectives will involve two phases:

Phase 1: Scenario Generation. In order to navigate this landscape a scenarios approach will be used. The ERP and the University of Leeds will work with the Climate Change and Environmental Futures team at ATKINS and Scenarios team at Shell to convene critical stakeholders at a scenario development summit to scope the key challenges, risks and firm adaptation in the utilities sector. Stakeholders will be convened by ERP members and the University of Leeds.

Phase 2: Scenario Response: Phase 2 of this work will investigate the effect of the scenarios on the business models of different utility typologies (such as generation or supply only and vertical integration). Phase two will operate in three work packages:

- **Work Package #1: Stress testing Scenarios.** To scope the commercial and political implications of the scenarios developed in stage 1. This will be an interview based method and will involve some quantitative testing of scenario assumptions. **Key Partners:** Utility companies, Local Authorities, decentralised energy developers, system operators, and system regulators.
- **Work Package #2: Scoping utility adaptations.** This work package will run Decision Theatres with key partners to map how the utilities business model can adapt to the scenarios developed in Phase 1. This work will define future pathways for the utility business model.
- **Work Package #3: Structural responses.** Building on work Packages 1&2 this work will define structural responses and adaptive pathways across three stakeholder sectors: (1) Government and Policy; (2) Commercial Utilities; and (3) Finance and Investment.

Schedule: (1) Scenarios [June]; (2) Decision Theatres [Sept-Oct]; and (3) Reports for release [Q4, 2016/Q1 2017].

Staffing, Steering Group and wider contributions

Analysis team: Mark Workman

Supported by: Bosch (Carl Arntzen), Stephen Hall (University of Leeds), Shell (TBC'd), Atkins (Jon Swan), Drax (David Ball), Hitachi (TBC'd), Ofgem (Geoff Hardy), SSE (TBC'd), Welsh Government (TBC'd) and APSE Energy Collaborative (TBC'd).

Budget

Six to Eight thousand pounds depending on the extent to which services in kind might be obtained from stakeholders.