

## ERP Project update (November 2016)

### 1 New Projects

#### 1.1 Transition to Low-Carbon Heat

Analysis Team Lead: Richard Heap, with Simon Cran-McGreehin

Project Sponsor: Carl Arntzen (Bosch)

Web link: <http://erpuk.org/project/low-carbon-heat/>

The PID was approved at Oct 2016 Plenary, followed by a launch event that was attended by a broad range of stakeholders. With a large amount of reports and discussion about heat at the moment, the Analysis team and Steering Group are focussing on areas where the project can add value. A key aspect is around supply chain development and governance. The approach has been supported by leaders of the Heat work in BEIS. The Analysis team are currently conducting early interviews and preparing a series of workshops for Q1, 2017. The project will report to ERP Plenary in July 2017.

### 2 Ongoing projects

#### 2.1 Future of Utilities

Analysis Team Lead: Mark Workman

Project Sponsor: David Casale

Web link: TBC

This project will investigate the effect of scenarios on the suite of innovative business model archetypes that vertically integrated actors may adopt to respond to emerging risks and the effect on innovation required in the future UK energy system.

Some preliminary outputs from the study were presented at the October ERP Plenary relevant to addressing the main project objective of assessing the impact that plausible future UK electricity system evolution to 2050 will have on innovation and investment.

The key interim findings in this regard are:

- £8.5 to 12.8 B of new revenues and £10.9 B in cost savings are available to participants in 2050.
- In order to deliver capital intensive innovation changes to wholesale and retail markets are needed.
- All technologies required to enable the business model archetypes proposed have been proven through a demonstrator and therefore are unlikely to be a limiting factor.

A case has been made to progress the work to the next project stage in order to allow:

- (1) the quantification of the value that end users subscribe to different energy services that the different business archetypes provide;
- (2) strategic responses of stakeholders whom are likely to have a major role the future UK electricity system evolution; and
- (3) the systemic responses.

This will allow the work to build on other existing work in this space as well as fill major gaps. The project is working in partnership with the ESC-IET Future Power System Architecture Project to assist in these aspects of the proposed future work.

#### 2.2 Barriers to System-Wide Energy Storage

Analysis Team Lead: Helen K Thomas

Project Sponsor: Peter Bance (Origami Energy)

Web link: <http://erpuk.org/project/barriers-system-wide-energy-storage/>

This work has considered the need for system-wide Energy Storage (including electrical, thermal, gas, hydrogen and storage in transport). The work notes that existing energy storage (e.g. in the form of fossil fuels) mediums are disappearing with alternative solutions required. Electrical storage solutions generally provide solutions at the shorter discharge-lower capacity end of the storage scale and therefore strategic, long-term storage solutions need to be considered also.

Alongside alternative solutions to storage, the report highlights the *financial, legal, political, commercial and regulatory barriers* to wide scale storage deployment and where possible, poses solutions for ways to overcome them. A 70% complete report was presented in July 2016 along with key insights from an ERP inputs and scoping workshop in this area. A final report and possible joint launch event (TBC) is expected in February/March 2017.

### 2.3 International Engagement

Analysis Team Lead: Andy Boston

Project Sponsor: John Loughhead (DECC)

Web link (phase 1 work): <http://erpuk.org/project/international-engagement/>

Ongoing activity is to feed into the Mission Innovation team as they set UK's priorities for this initiative. Discussions have taken place with DfID on how ERP could engage with their research programmes and help review their findings.

### 2.4 Horizon Scanning Project

Analysis Team Lead: Mark Workman

Project Sponsor: Jim Watson (UKERC)

Web link: <http://erpuk.org/project/horizon-scanning/>

The Horizon Scanning project developed the following activities:

- An online survey of disruptive forces which are likely to impact the international and UK energy system completed by 80 persons working in the energy-environment sector; and
- Two workshops held on 30th November 2015 and 7th December 2015 involving senior level policy makers, academics and industry representatives to identifying what the key uncertainties are in the development of energy issues both internationally and in the UK.

The work was not well understood by the ERP plenary members when the raw outputs from the workshop were presented in January 2016. The next steps for the Foresight project have been/are two-fold: (1) feed the work into a follow up project 'Utility 2050' – see project above; and (2) complete the Foresight project by using outputs to interview ERP members and in turn informing the ERP work programme.

## 3 Projects in Dissemination Phase

### 3.1 Energy in Transport

Analysis Team Lead: Simon Cran-McGreehin

Project Sponsor: Neville Jackson (Ricardo); joint project with GO-Science

Web link: <http://erpuk.org/project/transport/>

The report was published in April 2016 at a post-plenary launch event. Conclusions have been presented at the Cenec-LowCVP conference and a DfT staff seminar; a second DfT seminar is due in December, this time with research-funding teams at which research priorities from the report will be highlighted. Support is being offered for projects that could help to address ERP conclusions, e.g.:

- The Low Carbon Vehicle Partnership's initiative to improve links between the transport and energy sectors.
- Imperial College's initiative to create a centre of excellence for air quality research and policy.

### 3.2 Buildings

Analysis Team Lead: Simon Cran-McGreehin

Project Sponsor: John Miles (ARUP)

Web link: <http://erpuk.org/project/buildings/>

The report was published in October 2016, and launched along with the Hydrogen report at the low-carbon heat event. Several of the conclusions and recommendations feed into the low-carbon heat project, and will be explored in that wider context. Other conclusions and recommendations can be pursued separately, e.g.:

- Discussions with BEIS about the proposed cross-departmental group for buildings energy policy, including its relationship to the EIB.
- Work with EPSRC to consider the role of an expert advisory body for buildings' energy policy.
- Work with the Energy Systems Catapult to consider how it could develop a longitudinal study, including how to draw on expertise from experts (e.g. at UCL).

### 3.3 Community Energy

Analysis Team Lead: Simon Cran-McGreehin

Project Sponsor: Naomi Luhde-Thompson (Friends of the Earth)

Web link: <http://erpuk.org/project/community-energy/>

The discussion paper was published in September 2015, and the recommendations have been promoted in bilateral discussions (DECC, devolved governments, community energy support groups) and events (including speaking invitation at a research event). The sector has picked up the challenge to improve the evidence base through a series of initiatives with researchers; and Ofgem is considering how to investigate alternative local arrangements for energy. ERP is keeping a watching brief on community energy research, and contacts made during the project are proving to be useful for other projects, e.g. low-carbon heat.

### 3.4 Managing Flexibility on the Electricity System

Analysis Team Lead: Andy Boston

Project Sponsor: Peter Emery (Drax)

Web link: <http://erpuk.org/project/managing-flexibility-of-the-electricity-system/>

The work is complete but a significant level of interest remains. It continues to be one of the most popular downloads from the website.

### 3.5 Role of Hydrogen in the energy system

Analysis Team Lead: Richard Heap

Project Sponsor: Neville Jackson (Ricardo)

Web link: <http://erpuk.org/project/hydrogen/>

Final report published in October 2016 following a launch at the ERP low-carbon heat event along with Buildings. The report has been widely circulated and well received, with follow ups from a number of organisations including BEIS, ETI, Sustainable Gas Institute, CCSA and Carbon Connect. The findings resonate with other ERP work, and also feed into the low-carbon heat project.

### 3.6 Public Engagement

Analysis Team Lead: Richard Heap

Project Sponsor: Ron Loveland (Welsh Government)

Web link: <http://erpuk.org/project/public-engagement/>

There is increasing discussion. The ERP report continues to be received positively and the recommendations are widely supported. Similar messages have been coming from a range of organisations and meetings and it is hoped that this work will be able to provide a focus for taking it forwards.

The report's recommendation that a Strategic Narrative needs to be developed for the transition to a low carbon energy system has attracted the attention of several organisations who have been talking with the project's lead analyst about how to take it forwards. Discussions are underway to hold a workshop in 2016 to identify what needs to be put in place to deliver it.

### 3.7 Smart Energy

Analysis Team Lead: Richard Heap

Project Sponsor: Phil Sheppard (National Grid)

Web link: <http://erpuk.org/project/smart-grids/>

The report will be published in Q1 of 2017. The report emphasises the need to ensure all energy vectors can be integrated into the smart system allowing them to provide services low carbon energy system. The report recommended developing a map of smart activity which will be valuable for coordinating developments. The Energy Systems Catapult has taken on this recommendation and has started a project to take this forward.

### 3.8 Cities

Analysis Team Lead: Mark Workman

Project Sponsor: John Swan (Atkins)

Web link: <http://erpuk.org/project/cities/>

The project was presented to the plenary members on 8<sup>th</sup> July who agreed with the findings. The report was finalized and disseminated in Q4, 2015.

The findings were presented at a number of events as well as to Clive Maxwell, Director General for Consumers and Households, DECC on 20<sup>th</sup> November 2015 to discuss the findings of the project.

The next steps with regards the work are to develop activities along the following lines:

- What does multi-level governance of the UK energy system look like?
- What is the future of the large scale vertically integrated approach to electricity supply and generation – The "Utilities 2050" project picks these themes up.