

## ERP Plenary meeting

**MEETING DATE:** Wednesday 15 April 2015, 09:45 -12:20  
**LOCATION:** Coin Street Neighbourhood Centre, London

### ATTENDEES:

Chair:	Keith MacLean	ERP Co-chair
Members:	John Loughhead Stephen Trotter Robert Sorrell Neil Ebenezer Peter Emery Kathryn Magnay Philip Sellwood David Clarke Masao Chaki Rob Saunders David Wright Neville Jackson Angus Gillespie Marta Smart Julian Allwood	DECC, ERP Co-chair ABB BP Department of Transport Drax EPSRC EST ETI Hitachi Innovate UK National Grid Ricardo Shell SSE University of Cambridge
Alternate Member attendees:	David Few Paul Drabwell James Wilde Mike Weston	Atkins BIS Carbon Trust UKERC
Observers:	Mike Thompson Andrew Wright Peter Bance Ali Naini	CCC Ofgem Origami Energy Ltd. Turquoise International Ltd.
Invited:	Robert Moore David Wagstaff	HMT DECC
Secretariat:	Farida Isroliwala David Noronha	DECC SSE
ERP Analysis Team:	Andy Boston Mark Workman Helen K Thomas Simon Cran-McGreehin Tom Watson Richard Heap Mathilde Bourgeois	ERP ERP ERP ERP ERP ERP ERP

## 1. Chair's introduction

Apologies were noted from: John Miles, ARUP, Martin Grant (Atkins, with David Few in attendance), Carl Arntzen (Bosch Thermo technology Ltd.), Tom Delay (Carbon Trust, with James Wild in attendance), Miles Elsdon (DfT, with Neil Ebenezer in attendance), Duncan McLaren (Friends of the Earth Scotland), Derek Grieve (GE), Sue Ion (Royal Academy of Engineering), Margaret McGinlay (Scottish Enterprise), and Ron Loveland (Welsh Government).

Guests at the meeting were welcomed and included: Robert Moore - HMT and David Wagstaff – DECC, for a joint guest presentation of a new project idea on Heat; Ali Naini – Turquoise International Ltd, attending as an observer and potential candidate for the VC/Finance representative on ERP.

Changes to ERP representatives were also noted as: Paul Drabwell , who is representing BIS until a new CSA is in place; David Wright from National Grid now that Nick Winsler has retired; and Kathryn Magnay, Head of Energy at EPSRC now that Alison Wall has changed roles.

Members were informed that due to the pre-election period known as “purdah”, ERP’s public-sector attendees would only be able to provide factual explanations of current Government policy, statements and decisions.

Minutes of the January 2015 meeting were approved and Members were reminded that (as with all previous minutes) these would be uploaded onto ERP website, thus becoming public domain.

The key objectives of the plenary meeting were outlined as follows:

- i. Ascertain key findings from Phase 1 of the Energy options for Transport project;
- ii. Highlight the conclusions of the Community Energy report;
- iii. Discuss future topic areas for the ERP analysis team and Members’ thoughts regarding ERP’s impact.

## 2. Energy Options for Transport

This session aimed to a) include an update of findings from Phase 1 of the project and b) seek Members’ views on the direction of Phase 2. As Chair of the Transport project work, Neville Jackson thanked the Analysis Team and Steering Group members for their work. He informed Members that with the project currently at the end of stage 1, some of the main issues were now familiar, such as *‘where is the best place to get hydrogen from?’*, or *‘what model changes can be introduced for particular impacts?’*

Tom Watson went on to highlight the objectives of the project stating that it was a high-level overview of the potential trade-offs required, which laid the groundwork for Phase 2.

The presentation first looked at some examples of mode-switching to reduce carbon emissions. It was shown that some beneficial switches (e.g. doubling train journeys or cycling) had only a limited impact on emissions due to the dominance of road transport. Main conclusions were that:

- Mode Switching has a role, but some contributions are small, and larger contributions tend to be limited by factors such as infrastructure.
- Fuel switching for non-road modes supported the conclusion that emission reductions would be relatively small and relatively expensive.

- There were large variations when mapping the confidence and impact values of alternative fuels and new technologies;
- Volumetric fuel energy density is very important for heavy duty road vehicles, ruling out options suitable for lighter vehicles such as batteries.
- It was important to take account of other significant issues facing the transport sector (e.g. such as air quality, vehicle size and flexibility of operation) and interactions with the energy sectors (e.g. demand for energy sources, use of infrastructure, etc.).

Tom concluded that Phase 2 would be presented at the ERP Plenary Meeting on 14 October, and would consider the best use for energy sources. Scenarios would present a broad approach and would be based around inputs rather than goal-seeking or cost-optimising characteristics for strategic decisions.

- Members were then invited to provide comments and further steer regarding the direction of Phase 2. These included: Clarity is needed for the role of international aviation, as the Climate Change Act and Carbon Budgets may treat this differently.
  - It would be useful to establish baseline pre-assumptions for energy demand and emissions, by drawing on historic trends, largely through changes in technology (i.e. improved efficiency). This could test the assumption of whether to continue seeking changes in technology as opposed to fuels.
  - It was asked whether future infrastructure would be compatible with transport needs and whether the focus of Phase 2 should be on preparing for new technologies, or on carbon reduction from engine efficiency and use of biofuels.
  - The report should start with identifying the scope (i.e. what is/not included).
  - Controversial issues (e.g. regarding biofuels and land use) should be referred to in a careful and balanced manner.
  - In terms of fuel efficiency of internal combustion engines, it was noted that more was still to come, especially in the heavy duty sector: demand for road fuels was falling in some European countries.
  - The benefits (or current lack of benefits) of electrification should be made clear and analysis of previous trends regarding weight and potential for light-weighting of cars should be included and ensure this process is congruent with a decarbonised grid.
  - As efficiency improves, embedded emissions of vehicles become more important - this should be referred to in the report, without expanding scope too much.
  - Members advised that Phase 2 should look at energy options in a lower demand future, and how to categorise UK transport for analysis.
  - It was suggested that globally and regionally different options are being taken up (e.g. practises in London differ to those in the North of Scotland). Furthermore, it is predicted that, by 2050, 80% of UK residents will live in cities.
  - Social science could assist with understanding demand – i.e. what cars do people actually want to drive, attitudes to vehicle ownership have changed (drop in young people getting licenses, more car sharing, autonomous vehicles etc.)
  - ERP's role in understanding what technologies enable us to do should not result in neglecting considerations of behavioural changes required.
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- Other discussions included that: Phase 2 should include indicative costs to help policy makers, and that perhaps the use of other analysis could pick up any small effects from new technologies.
  - The report should not ignore incremental changes – options that could help with issues that are currently small could have large impacts in future if they turn out to be relevant to other issues. Similarly, smaller contributions (e.g. bicycles in place of cars) are important and can add up to give a large contribution.

- Looking into ammonia and its impact – in response, the Steering Group were aware, but limited time and the broadness of the remit meant a slightly constrained scope.

Neville Jackson re-emphasised the project scope needed to be kept under control. The study would aim to look initially at a mix between low carbon fuels and energy efficiency and address other comments where possible. Big potential changes by 2040 mean that not all issues will be addressed and energy sources and demand will need to be the main focus.

Keith MacLean concluded, noting two important questions to include within the report:

- 1) Changes driven by consumer demands that are in turn driven by regulatory tools: how to change behaviour in future, especially market pull for different technology?
- 2) What will the supporting infrastructure be to support new technology and new fuels for transport?

### 3. Community Energy (highlights)

Simon Cran-McGreehin updated the Members on the final conclusions of the report and invited comments on the five recommendations for new research. In summary:

- Two recommendations were based around looking into forecasts and assessments of community energy projects:
  - DECC and Devolved Administrations should develop recommended approaches for monitoring and evaluating CE projects, and for use in business cases for proposed projects
  - DECC and Devolved Administrations should develop guidance for decision-makers for assessing CE in holistic & co-ordinated manner
- Two recommendations aimed to encourage uptake of trial projects to inform policy and to develop products and services that would be of use in future:
  - CE support groups should develop a database of community groups to participate in trials of technology and services
  - DECC and Ofgem should plan trials of alternative arrangements for local energy with appropriate funding and commensurate regulatory requirements
- The last recommendation looked into closing the “virtuous circle” whereby community energy can cause multiple benefits, by improving delivery of benefits:
  - DECC & Devolved Administrations should identify routes by which community energy groups could receive tailored advice and delegate tasks

Feedback on the report and its recommendations included:

- The report could clarify challenges for heat, by asking whether we are missing answers to the challenges faced in terms of community projects. In response, Simon noted that most projects are for electricity, with heat being less developed. However, the report is relevant for heat as well, as many issues are common to heat *and* electricity, but edits will be made to emphasise heat more.
- The report should focus not just on technologies, but also on the role of market places (e.g. peer to peer) and market enablers (e.g. ICT, and financial engineering).
- The Energy Saving Trust is working to develop the evidence base for Community Energy, and is providing toolkits for community energy projects.
- Adding a paragraph on the benefits of community energy would strengthen the report. One member emphasised how hard it is to get concrete costs and benefits relating to community energy; for example, one benefit that customers can seek is greater control of the energy system.
- Innovate UK has funded 14 projects recently, looking at integrating local generation and demand side response, which encourages broader thinking around energy (cross-vectors not just electricity).

- Community energy could justify a different type or level of energy regulations. It could offer consumer protection via ownership or democratic processes.
- Underlying drivers behind community energy projects and innovation (regulations, costs, etc.) should also be noted, including comments on which ones might be most important in future.

Simon thanked Members for their input and comments. He explained that some recommendations within the report are similar to some made previously by other organisations, but that it is beneficial for the ERP to reinforce these recommendations. He noted that there is great enthusiasm behind community energy, but that there is a need to better understand the full range of costs and benefits, so that more opportunities can be considered and supported where appropriate.

#### 4. Promoting Key Issues

This session considered and discussed key issues that have been identified relating to the energy system based on ERP's recent projects/project work.

Andy Boston covered ERP's role and key messages from recent work. A selection of these included:

- Having the right metrics for decision making which may mean developing better models of the effect of low carbon pathways on economic prosperity and evaluating technologies on the basis of their system wide effects
- Acknowledging the pre-eminence of demand reduction in helping with all aspects of the trilemma and incentivising the right technologies needed to support the grid in a high renewables world.

The importance of Members' participation in steering groups and projects was highlighted and that coordination between the ERP Team, its Members and external bodies is key to ERP's success

Members were asked to consider the key messages they had picked up from ERP's recent work, and to advise on what messages ERP should prioritise. The interactive session which followed was used to assess this.

**Action: ERP Analysis Team to circulate document with key messages from recent ERP project work and ask Members to consider these / put forward their views on those that should be prioritised.**

#### 5. ERP Projects & Impact (interactive session)

In this session, questions were posed regarding ERP's role, impact and project work. Members were asked to provide their views using the Mentimeter interactive voting system which allowed everyone to participate via their mobiles or laptops. The questions posed were as follows and results have been noted in order of level of support:

##### **A1. "Where does the UK energy system most need a breakthrough?"**

Answers: Storage, CCS, demand-reduction and integration. Other nominated answers were infrastructure, architecture, through-life-energy, energy-networking, marketplaces, investment, demand, coordination, direction, hydrogen and heat.

**A2. “What area should ERP focus on for future projects?”**

Answers: Energy systems, energy demand, social, energy vectors and economic.

**A3. “Which sectors would most benefit from ERP’s input?”**

Answers: Heat, electricity, transport, built environment and industry and oil & gas.

**A4. “Name specific project areas that you would actively participate in”**

Answers: Systems, storage, regulation, strategy, demand, and heat

At the end of this section, it was emphasised that it was the public/private mix of members across the energy system that ensured the value and uniqueness of ERP. Figuring out directions for future innovations would be an important and essential role for the organisation. Members raised the importance of regulatory issues, and how perhaps ERP is not necessarily about identifying new technologies but also about looking into applications.

The next section included the questions:

**B1. “ERP’s most important role is...”**

Answers: Providing impartial analysis, developing public/private sector consensus, Influencing key research areas, networking opportunities.

**B2. “ERP’s outputs and activities have been used by my organisation to...”**

Answers: Learn more about a topic, help us influence others, network with others within ERP, influence our own strategy, and network more broadly

**B3. “ERP could become more effective by a greater emphasis on...”**

Answers: Follow up activities, presenting at conferences, social media, technical workshops, collaboration, launch events and quick-fire topical analysis

**B4. “What are ERP’s strengths?”**

Answers: Diversity, membership, partnership, breadth, interface, and analysis. Others were cross-sector, long-term, objectivity, academic, honesty, authoritative, public, members, team, depth of work, private.

**B5. “What are ERP’s weaknesses?”**

Answers: Impact, profile, impact beyond report, dissemination, limited resources, and capacity. Others were timidity, flexibility, conservative, over-caution, resource, size, niceness, promoting, complexity of message, and diversity.

Andy brought the session to a close by thanking Members for their input and the outlining the next steps. The conclusions would be collated and analysed by the ERP Analysis Team.

## 6. New Project Idea from HM Treasury – Heat

This session presented a possible new project on Heat, for which the following overview was provided.

*Overview: the heat sector accounts for around 30% of the UK's CO2 emissions, and over 40% of energy consumption by end use, making heating the single largest reason we consume energy (with transport second). In order to achieve cost effective territorial decarbonisation of the UK, the paradigm so far has been that heat in buildings can achieve deep emissions reductions. This is largely via electrification through the use of heat pumps, with heavy industry having a smaller total potential to decarbonize (what it can achieve would be through using biomass and industrial CCS).*

*However, there are a number of reasons why a more sophisticated analysis through DECC's heat strategy (2013) and learning from the RHI has led Government to take a more nuanced position on heat for buildings, where heat pumps continue to have a major role but other solutions such as heat networks become much more significant. The heat sector also faces other opportunities and challenges, similar to power and transport, that can affect energy demand and emissions, including: energy efficiency and smart technologies, changing behaviour and trends, sustainability, affordability, air quality, and reliability. Decarbonisation strategies will have to consider these factors, and the impacts upon the energy sector as a whole.*

Robert Moore from HMT began the presentation by explaining that the objectives of the proposal were to help reach broad strategic decisions on carbon targets while analysing that historically the industry heat sector was an important but lesser known and segmented sector. David Wagstaff (DECC) explained that DECC had recently conducted road maps for each of the heat intensive sectors. DECC & HMT would like to propose that ERP conduct some analysis looking at the medium to long-term decarbonisation across these identified sectors. ERP's expertise could be used to advance a technology boost on heat.

Members were asked for feedback regarding whether they felt that would be an interesting area to work on. If so, views would be taken from HMT and other departments before a final proposal was drawn up.

Keith MacLean then asked for clarification on a few points, including prioritisation of funding, and the need to look beyond industrial heat emission into different sectors.

It was explained that the idea stemmed from joint work/effort by DECC and HMT to help lay down challenges to industry in all sectors to be low carbon whilst remaining competitive and active in UK. It was important to also consider what the ministry itself should be doing, although full conclusions would depend upon the views of a new government and would be constrained by funding limitations.

Members were asked whether they wanted to make an argument against this subject, otherwise the project scope would be put together and Members, particularly from the private sector, would be asked to volunteer to be involved with the project.

One member highlighted how complex this area was to pursue, and how arduous delivering something of value would be. It was suggested to carefully consider elements of international impact (state-of-the-art technologies available in better locations, global carbon perspective, etc.) and that perhaps a few members could be invited to dialogue with ERP to clarify the scope of project and then form the core steering group. The steering group would need a strong understanding of the issue as the investment point was essential here, rather than the technological challenge point.

Another member mentioned Cornwall Energy Island and suggested the project could look into the relocation of industry to areas of high renewable sources, e.g. hot rocks and solar PV.

The discussion was concluded with a note that members would be sent an email encouraging them to participate and help shape this project work.

**Action: ERP Members to email ERP Analysis Team to register interest in the Heat Project Steering Group.**

## 7. AOB

Members were informed about a workshop on the “Role of Game Theory in Assessing Strategic Uncertainty” which will be held on the **12<sup>th</sup> May** at **Imperial College, 170 Queens Gate**. The workshop is targeted at industry and policy makers and aims to highlight how game theory tools can facilitate strategic analysis of complex energy and water problems for policy makers and the private sector.

Details of the next plenary meeting were provided: **Wednesday 8<sup>th</sup> of July, at Royal Academy of Engineering, 3pm – 9pm, which will include a guest speaker and the annual ERP dinner.**

Members were invited to enjoy the buffet lunch, and the meeting was brought to a close.