ERP Plenary meeting

MEETING DATE:	Tuesday 12 January, 2016, 15:00 – 17:30
LOCATION:	The Royal Society of Chemistry, Piccadilly, London

ATTENDEES:

Chair:	John Loughhead	BEIS & ERP Co-Chair
Members:	Ian Funnell	ABB
	Alan Thomson	ARUP
	Martin Grant	Atkins & ERP Co-Chair
	Carl Arntzen	Bosch
	Bob Sorrell	BP
	Philip New	ESC
	Philip Sellwood	EST
	Rob Saunders	Innovate UK
	Peter Bance	Origami Energy Ltd
	Ali Naini	Turquoise
	Jim Watson	UKERC
	Prof Julian Allwood	University of Cambridge
Alternate Members:	Bruno Gardner	Carbon Trust
	Claire Rees	DfT
	Jon Fenn	National Grid
Observers:	David Joffe	CCC
	Andrew Wright	Ofgem
Invited to present:	Richard Howard	Policy Exchange (attended item 5)
Invited:	Paul Durrant	BEIS
	Richard Leyland	BEIS
	Ross Lowrie	Environment Agency
	David Casale	Turquoise
Secretariat:	Mark Corbett	BEIS
	Samuel Stephens	Atkins
ERP Analysis Team:	Andy Boston	ERP
	Simon Cran-McGreehin	ERP
	Richard Heap	ERP
	Helen Thomas	ERP
	Mathilde Bourgeois	ERP

1. Chair's introduction

Apologies were noted: Tom Delay, Carbon Trust (Bruno Gardner in attendance); Phil Blythe, DfT (Claire Rees in attendance); Jason Shipstone, DRAX; Kathryn Magnay, EPSRC; David Clarke, ETI (Jo Coleman in attendance); Greg Kellsall, GE; David Wright, National Grid (Jon Fenn in attendance); Margaret McGinlay, Scottish Enterprise (Veronica Noone in attendance); and Ron Loveland, Welsh Government.

The following were welcomed: invited guest presenter Richard Howard from Policy Exchange who joined for the session on Low-carbon Heat; Paul Durrant and Richard Leyland from BEIS; Ross Lowrie from the Environmental Agency who was attending as an observer; and (in absentia) Jason Shipstone who has replaced David Ball as main member representative for Drax.

The chair congratulated former ERP co-chair Keith Maclean on the award of an OBE.

The minutes of the October 2016 meeting were approved with no amendments from members.

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

i. Update on developments within Government and on the work of the Energy Innovation Board
ii. Presentation of proposed new operating model for ERP
iii. Discussion of future shape of ERP and work programme
iv. Presentations on low-carbon heat by guest speaker Richard Howard from Policy Exchange, and on ERP's Low-carbon Heat project

2. Standing Item – BEIS Update

John Loughhead provided an update on Government activity about energy:

- BEIS has settled its top-level organisational structure and priorities, including developing the Industrial Strategy and the Emissions Reduction Plan (ERPlan). John Loughhead has been appointed as Chief Scientific Advisor, and Tim Dafforn as Chief Entrepreneurial Advisor.
- The draft of the industrial strategy will be published for consultation in the next few weeks. ERP members are welcome to propose secondments to BEIS by colleagues (of similar level to civil service HEO/SEO or 2-3yr university post-doc) who have driven innovation in industry.
- The Autumn Statement included an additional £2bn/yr for research and innovation by the end of this Parliament, as part of the Industrial Strategy.
- The Energy Innovation Board (EIB) has been formally announced, and has met four times. ERP co-chair Martin Grant has joined the EIB as independent member. The EIB is engaging in studies about the emerging Emission Reduction Plan.
- Mission Innovation has launched work areas. The UK is heavily active in all topics, and is co-leading on the topic of heating and cooling.

Rob Saunders noted Innovate UK's role in administering the Industrial Strategy Challenge Fund, which will channel part of the extra funding announced in Autumn Statement. Innovate UK is currently defining the challenge areas (e.g. which areas of the economy to target). It will run workshops to get industrial input, and is seeking engagement from ERP members, including feedback on the proposed energy themes: UK manufacture of next generation batteries; grid technology to reduce energy bills; low-carbon heating and cooling; development and commercialisation of low-carbon gas; and development of advanced materials for step-changes in energy technology.

The following points were discussed by attendees:

- The timescale for the funding is out to 2021 (timescale of the industrial strategy).
- There is space for demand side energy themes, and ideas would be welcomed.
- Business models will be considered as well as technologies.
- The energy themes should include links with the digital sector.
- The themes align well with the Mission Innovation topics.

Actions:

- **ERP A-Team to provide members with further information about Challenge Fund.**
- **Members to contact Graham Allardice if colleagues are interested in secondments to BEIS.**

3. New Operating Principles for ERP future shape

Samuel Stephens provided an overview of the ERP's proposed operating model for the new Consortium Agreement (CA) from July 2017 onwards. Changes were based partly upon feedback in a members' survey and a small workshop, in late 2016. He outlined key themes for the ERP, and four pillars that allow ERP to be successful: public-private partnership with a unique range of contributors; relevance, focusing on critical questions of the day; agility, to respond using flexible delivery model; and an active membership, that is engaged and is able to convene wider stakeholders. The main aim of the updated operating model is to seek more member engagement, e.g. working groups doing more with ERP analysts then steering groups currently. Some projects would be shorter than at present. The overall aim of the ERP should be to deliver impact after report publications. The next steps are to finalise operating model using members' comments, and incorporate it into new CA, then finalise the fee structure and sign new CA in Apr-Jun 2017. New ways of working will be phased in from January 2017, e.g. forming the new Executive Committee and using the new project identification process.

The following points were discussed by attendees:

- It is good to sharpen up the process, to be nimble and not tied to the quarterly plenary meetings, so that ERP is able to respond on short time-scales (e.g. to requests for information from BEIS). But it is important that ERP members are able to debate the work programme, have buy-in into the decision-making, and are able to give dissenting views about projects' conclusions. Longer-term projects would still need to be discussed at plenary meetings.
- ERP members are keen on the challenge role for the EIB, in which ERP would answer EIB questions (outputs pulled) in addition to the current model of promoting ERP projects (outputs pushed). There is no guarantee of funding from BEIS/EIB for this role, which could require about 10-15% of the ERP's workload (up to one member of staff on average).
- Communications must be a key part of the operating model and must be properly resourced, since follow-up is essential in order to have impact. ERP is taking action already to widen its stakeholder base and increase its impact, and ERP members can disseminate ERP findings to amplify their impact.
- The energy innovation landscape is very busy; ERP should consider the landscape and have a view about whether it could be improved. The EIB sees ERP as a sector representative body as opposed to an analysis provider. The ESC's capabilities are evolving during 2017: it will adopt the ETI's Strategic Analysis Function (SAF), and it will develop more formal relationships with actors in the sector.

Action:

- **ERP Secretariat to circulate a redrafted paper accounting for members' comments, including explaining different types of project and noting plenary as an integral part of the processes.**

4. ERP Future Work Programme

Andy Boston presented the results of an on-line poll about opinion pieces about topics for potential ERP projects. The exercise was primarily to stimulate debate, and the results (*Autonomous Vehicles* and *Digitisation* were the most popular) do not have to set the ERP's work programme. An alternative route of finding new projects is by ERP members or other organisations asking for assistance; indeed, DfID wants industrial input for its Energy & Economic Growth (EEG) applied research programme. John Loughhead noted that DfID might be joining ERP.

The following points were discussed by attendees:

- Digitisation and emerging technologies are of interest, although the Automotive Council and the LowCVP are already doing lots of work on emerging trends, so ERP would need to go beyond that if we studied that topic.
- A greenhouse gas removal (GGR) project would need wider expertise beyond ERP.
- There was support for ERP industrial input for DfID's EEG programme, but that support needs to be from those with experience in development nations. If the work with DfID became a longer-term piece then it would be funded by DfID.
- Some of the topics could be traditional ERP projects, and others could be done differently e.g. get members together for a debate.
- All projects should be assessed in terms of scope (and hence cost and feasibility), and where ERP's approach would add value to the topic.
- An international focus is very important (especially given the links to the industrial strategy) to understand opportunities for UK businesses.
- There is a risk of just reviewing work by other groups, whereas the ERP's range of members means that it can do unique work.
- Project selection should start at the end and work backwards, by identifying the stakeholders that we're trying to influence. We must think more widely than engaging government and industry, to look at the great deal of public engagement that is required, and also to consider links between sectors e.g. energy & transport.
- ERP projects are more likely to have traction with Government if the projects are pulled (e.g. requested by EIB) than pushed (i.e. suggested by members). ERP will need to look for emerging trends to explore, in order to anticipate questions that might be asked, and then make itself ready to answer when they are asked.

Actions:

- **A-Team to consider the projects against the three criteria for selection: whether ERP has the ability to address the topic; other work being done on the topic; and what ERP would add.**
- **A-Team should continue with the DfID project.**

5. Low-Carbon Heat Project – Project Plan & Key Topics

Carl Arntzen (Steering Group chair for ERP's Low-Carbon Heat project) provided an introduction to the topic. The Steering Group has a general consensus that there is no silver bullet for decarbonising heat but rather a range of solutions, each posing significant challenges. The ERP project aims to try to advance the debate by exploring governance issues for implementing each solution.

Richard Howard of Policy Exchange presented an overview of his report *Too Hot to Handle* *[see endnote i]*, about decarbonising domestic heating. It estimates that domestic heating GHG emissions are down by 25% from 1990 (20% if weather-corrected): the number of households has increased, but there have been reductions both in the amount of energy needed per home and in the carbon intensity of the energy (e.g. lower-carbon electricity and more biomass). It agrees with DECC's 2013 Heat Strategy about the use (but not the extent) of heat networks in dense urban areas and heat pumps for off-gas-grid customers, but disagrees regarding the potential extent of heat pump deployment. The report considers a range of heat decarbonisation options, provides an estimate of their decarbonisation potentials and costs/impacts, and makes recommendations for their use in the sector. The report concludes that a new heat strategy is needed, and highlights eight key topics that it would cover.

Richard Heap provided an overview of the ERP's *Low-Carbon Heat* project. The report is focussing on the governance of the transition from existing heating norms to future low-carbon heating. Key topics are: constraints on options that will likely prevent one single nationwide solution; the role of the

public in the transition; governance frameworks to coordinate decision making; and the timing of sequential steps (including decisions needed during this Parliament).

The following points were discussed by attendees:

Customers

- Consumers and public are slightly different, overlapping groups.
- All options will have some disruption for customers, e.g. hydrogen in existing gas grids would require new boilers and appliances, and heat pumps would require further disruption.
- It is hard to see how to get customers excited about heat (as opposed to transport).

Preparations for transition:

- There are uncertainties about how to govern trials of low-carbon heat.
- The UK needs to try small demonstration projects to learn lessons, but must also provide long-term certainty by committing to further (perhaps six) larger trials that would come afterwards.
- Correct incentive frameworks are essential to let the sector take opportunities, efficiently.
- We need to understand what powers local authorities would need for leading heat projects.

Systems considerations:

- Decarbonising heat is generally viewed as harder than for electricity (for which energy sources can be added incrementally), although there are some similar tools e.g. storage (passive thermal storage in buildings, hot water tanks, etc.) and system flexibility.
- We must consider low-carbon heating in terms of resilience and diversity of energy systems, including where it is part of multi-vector systems.
- The ERP project should do a thought experiment with CCS removed from the options (i.e. the current situation).

Buildings:

- It would be a huge missed opportunity if UK the failed to construct its new buildings to very high thermal standards: it is so much cheaper at the start to add high energy efficiency, heat storage materials and heat pumps. New-build energy efficiency is not fully within the power of the energy sector, and help will be needed from actors from outside of the energy and building technology sectors, e.g. lenders.
- It is better to view building fabric changes as home improvements and not energy efficiency.
- There is a mis-match between the control offered by digitised heating controls and the flexibility of older heating systems, which are likely to remain in place for many years.
- Cooling should be considered alongside heating; at present we buy fans for summer cooling. There are currently investments in joint heating and cooling projects.
- Smart meters can provide data for innovators (as discussed in ERP's report *Heating Buildings*).

GHG emissions targets

- The Policy Exchange report's published scenarios look at a GHG emissions cut by 2050 of 80% across the economy, so some sectors would need to do more than 80% (although industrial GHG emissions cuts are doing quite well, despite often being cited as hard-to-treat). We will need more than 80% cuts across economy after 2050, but then the costs rise exponentially for all sectors, and a 90% cut for heat requires totally different solutions to an 80% cut.
- The cost of electrifying heat is expected to be high, but perhaps more could be done to confirm this, e.g. the high cost of heat pumps confuses some observers given their apparently simple function (a reverse fridge).
- We need to take every opportunity to strip out GHG from the processes: e.g. to get to net zero GHG emissions would require not bio-SNG but rather converting it to H_2 and burying the CO_2.

Action:

- **ERP A-Team to take attendees comments into account, and ensure that ERP contribution is new and different to the myriad of other current projects about heat.**

6. AOB

Martin Grant invited members to contribute to a fund for the David MacKay Research Fellowship.

John Loughhead noted that Andy Boston is standing down as head of the ERP Analysis Team, thanked him for doing a brilliant job, and proposed to give a proper farewell at the next Plenary meeting. The co-chairs propose to cover the role temporarily with a secondee from a member organisation from the end of March for a few months, and invited members to nominate candidates; thereafter the post would be advertised for a longer term role.

Details of the next plenary meeting were provided as: Wednesday 26th April, 9:45-16:00 to be held at The Royal Academy of Engineering, London. This meeting will be followed by a post-plenary session, details of which will be communicated closer to the date.

Members were invited to join wider ERP stakeholders for the post-plenary drinks reception and ensuing event addressing the topic ""How can the UK Energy Sector help deliver the government's industrial strategy to create new growth in home and international markets" with guest speakers Julia King, The Baroness Brown of Cambridge DBE; Tom Greatrex, Chief Executive, Nuclear Industry Association; and Nick Gardiner, Managing Director – Offshore Wind, Green Investment Bank.

The meeting was brought to a close.

[i] *Too Hot to Handle* (Policy Exchange, 2016), available at: https://policyexchange.org.uk/wp-content/uploads/2016/11/PEXJ4810_Too_hot_to_handle_09_16-V2-WEB.pdf