

**ERP Plenary meeting – draft minutes**

**MEETING DATE:** Wednesday 9 April 2014, 9:45 -12:30

**LOCATION:** South Bank Rooms, Coin Street Neighbourhood Centre, 108 Stamford St, London SE1 9NH

**ATTENDEES:**

Chair:	Keith McLean	SSE, ERP Co-chair
Members:	David MacKay	DECC, ERP Co-Chair
	John Miles	Arup
	Carl Arntzen	Bosch
	Bob Sorrell	BP
	Tom Delay	Carbon Trust
	Philip Sellwood	Energy Saving Trust
	David Clarke	ETI
	Duncan McLaren	Friends of the Earth
	Nick Winser	National Grid
	Neville Jackson	Ricardo
	Sue Ion	Royal Academy Engineering
	Maggie McGinlay	Scottish Enterprise
	Angus Gillespie	Shell
	Ron Loveland	Welsh Government
Alternate Member attendees:	Richard Neale	Atkins
	Chris Pook	BIS
	Craig Lucas	DECC
	Neil Ebenezer	DfT
	Andy Gibbs	ESRC
	Andy Bullock	GE
	Andres Larriera	Hitachi
	Paul Lewis	Scottish Enterprise
	Nick Smailes	TSB
Observers:	Mike Thompson	CCC
Invited:	Judith Ward	Sustainability First
	Sarah Deasley	Frontier Economics
Secretariat:	Farida Isroliwala	DECC
	Rufus Ford	SSE
Analysis Team:	Andy Boston	ERP Analysis Team
	Mark Workman	ERP Analysis Team
	Richard Heap	ERP Analysis Team
	Simon Cran-McGreehin	ERP Analysis Team
	Helen K Thomas	ERP Analysis Team

**Chair's introduction**

Apologies were received from Stephen Trotter (ABB), Martin Grant, (Atkins – with Richard Neale in attendance), John Perkins (BIS – with Chris Pook in attendance), Rod Smith (DfT – with Neil Ebenezer in attendance), Peter Emery (Drax), Alison Wall

(EPSRC – with Andy Gibbs (ESRC) in attendance), Derek Grieve (GE, with Andy Bullock in attendance), Masao Chaki (Hitachi, with Andres Larriera in attendance), Mark Wagner (Isentropic), Peter Bance (Origami Energy), Tony Robinson (SEP), Rob Saunders (TSB, with Nick Smailes in attendance), John Loughhead (UKERC) and Julian Allwood (University Cambridge).

Keith welcomed everyone to the Coin Street Neighbourhood Centre. Its appropriateness for a meeting discussing buildings was noted given its solar chimneys, rainwater harvesting and solar thermal panels.

The Co-chairs extended a welcome to those alternates who were new to ERP and to Maggie McGinlay who was attending for the first time on behalf of Scottish Enterprise.

The minutes from the January 2014 meeting were approved. Keith noted that since then the Co-chairs had met with David Gray, Chair of Ofgem, who said he was open to working with ERP more.

### Regulating for Innovation

Keith extended a warm welcome to Judith Ward (Sustainability First) and Sarah Deasley (Frontier Economics) who were invited to present their work on demand side innovation.

Judith described Sustainability First as a small charitable environmental think-tank with a focus on the demand side. The presentation described Paper 11 of their three-year GB Electricity Demand Project. Paper 11 was a collaboration with Frontier Economics and titled: 'How could electricity demand-side innovation serve the electricity customer in the longer-term?' The paper discussed longer-term electricity demand-side innovation issues from a largely customer-focused perspective. It took a high-level look at approaches to electricity demand-side innovation funding, in particular the Low Carbon Networks Fund, as a catalyst to demand-side innovation, and offered a limited look at the experience of some customer-facing market actors on innovation funding in this area. The authors stressed that this paper was one of a series of twelve project papers and was not in any sense a 'review' of innovation funding. The presentation followed the slide-set, attached to these minutes.

### Discussion

The following questions and comments were raised (*with answers from speakers in italics*):

- The LCNF is focused on DNOs but they are one step removed from mass market. Does that limit what can be done? *Some actors in the survey conducted for paper 11 highlighted the importance as they saw it of an 'end-to-end' approach to customer-facing innovation research in this area.*
- Dissemination is a requirement for most funding packages, should this be a requirement for the LCNF? *Knowledge share is a basic requirement of LCNF, and considerable effort goes into this on a project-by-project basis. However, there are broader issues about how best to leverage overall 'learning' from customer-facing smart pilots & trials, including LCNF. For example, to carry out more thematic analysis of findings, to distil the lessons and also so that research-funders can understand where future knowledge / research 'gaps' might be.*

- Failure/success is not the language used for EU funds – it's about knowledge sharing. The LCNF should think in the same way. *LCNF is concerned with ensuring value for customers and can also accommodate the idea that delivering innovation involves learning from what works - as well as from what does not work.*
- Ofgem by its nature is naturally cautious so may over-manage. There's a lot of money in the LCNF but it's narrowly focused. Therefore Ofgem may not be right body to manage the fund.
- It's not uncommon to have no household pull. There may never be a value proposition for individuals – benefits are community level. LCNF is under-subscribed which signals that the value proposition isn't there. *LCNF has in practice funded some large-scale customer-facing projects. However, in discussion for paper 11, some respondents had felt that the strong network focus of the LCNF fund, made it somewhat harder to obtain agreement for projects focused on 'end-to-end' demonstration of demand-side value, albeit this may well be where a need for 'commercial' research may be greatest.*
- A competitive tension can also prevent take-up. The UK needs some powerful ESCOs, for example the Google/NEST/RWE offering for smart thermostatic controls. ESCOs can answer previous issues of community benefit. Are they coming forward? *Demonstrating how best to aggregate benefits will help to move things forward. However, there are some detailed administrative silos and regulatory barriers which still need to be tackled to 'unlock' the local demand-side.*
- Rather than new trials we should leverage large data sets that exist – need anonymising and sharing. *Cochrane Collaboration is worth looking at as a good example of thematic analysis and systematic review in the pharma-sector. An imaginative, evidence-based approach to meta-analysis may well hold some lessons for thematic review of the many current electricity demand-side smart pilots & trials.*
- Smart meters need to be made attractive with Smart tariffs. *DECC is understood to be working on this in terms of the smart meter benefits analysis.*
- A good example of getting value from a number of datasets was recently demonstrated by the "Hackathon" at Tech City, which released Environment Agency data to develop flood response projects.

Members thanked Judith and Sarah for their interesting presentation and discussion was drawn to a close.

## Results of the Buildings Project

The work was undertaken by Simon Cran-McGreehin of the Analysis Team and overseen by a steering group chaired by John Miles of ARUP.

### Introduction

John Miles introduced the presentation regarding energy-related emissions due to buildings. He noted that the draft report was a work-in-progress that would be refined down to the key messages after input from the ERP members. He noted there would be a workshop towards the end of the project to disseminate final results.

## Presentation

Simon Cran-McGreehin presented slides to summarise the key issues from the draft report. In summary, the key messages were:

- Reducing energy demand should be the focus for reducing buildings' emissions;
- Heat demand is the key issue, and c.80% reductions are possible in some cases;
- Uptake of measures is low due to limited regulatory push and market pull;
- Expectations are inaccurate due to lack of knowledge about buildings and occupants;
- There is little feedback about actual performance.

An overview of the UK buildings sector was provided. Domestic and commercial buildings sectors are likely to grow by 30% and 15%, respectively. Up to 95% of existing homes and 65% of workplaces are likely to remain out to 2050, and will need to be retrofitted. For the remainder of the growth, new-build standards for energy performance are also important. Buildings account for about half of UK emissions, and space heating accounts for about half of buildings' emissions. Energy and emissions vary significantly depending upon the type of building and its occupants, but it can be difficult to unpick the different influences. The project focussed upon demand reduction because it is the fundamental driver for emissions; it is rising due to the growing population; it offers the widest range of options for reductions and it offers the largest possible reductions. It focussed on space heating demand in particular.

It was explained that buildings' actual energy performance differs from best practice due to three "gaps". The "ambition gap" is the difference between best practice and what is actually attempted. It can be due to practical issues or costs (especially for retrofitting existing buildings), but it is largely because of limited interest in higher performance. It could be reduced by ensuring that regulations keep pace with best practice, and by developing products and policies that appeal to people's interests, and making use of "trigger points" when retrofit is more likely. The "prediction gap" is the difference between the expected performance and what is actually possible for a given design. It is due to lack of reliable data and modelling, and could be reduced by further research. The "performance gap" is the difference between the realistic potential and the actual performance. It is usually due to the quality of work on-site, and limited inspection; it could be reduced by better enforcement of standards.

Data was presented comparing UK housing's average heating demand, UK housing standards from different eras, and Passivhaus standards. This illustrated the ambition gap (between UK standards and Passivhaus standards), and suggested the presence of a prediction and/or performance gap (between UK standards and the UK average demand).

It was noted that many organisations are interested in buildings' energy and emissions, mostly in policy and deployment, but few in monitoring performance. Most Government work is focussed on deployment, and not on research or feedback, and it is split between departments. There are some projects seeking to understand uptake decisions, and also energy usage. However, progress could be improved if there was greater co-ordination of efforts between Government departments and between research projects.

The proposed next step was to hold a workshop to consider opportunities for:

- Co-ordination of research efforts;
- Consistent and comparable data gathering and use;
- Better performance checks to enforce regulatory standards,

## Discussion

The following points were made, *answers from Simon and John italics.*

- What is the biggest of the three gaps (ambition, prediction or performance)?
  - *Hard to say; depends upon the building; but we can quantify that the ambition gap is large, especially for new-build.*
- What about other countries?
  - *Germany is a particularly good example of efficient and effective buildings;*
- What about the links between energy efficiency and fuel poverty and equity?
  - *The steering group was mindful of that in the project; the public debate in late 2013 about energy costs was all about bills and unit rates, and did not help the public to understand their options for reducing consumption and hence costs, or the use of levies for achieving this.*
- The proposal that the UK should continue to install measures whilst continuing the research runs the risk of doing yet more shallow retrofit - that makes it hard to then justify deep retrofit later on (on basis of marginal cost savings and repeated hassle).
  - *Agreed. The hope was that deep retrofit would happen now, using existing measures and understanding. But deep retrofit is unlikely at present, so there is an argument that the UK should not push ahead with retrofit (which is likely to be shallow) at present, until we have done more research to understand how to encourage deep retrofit.*
  - *There are disconnects:*
    - *Energy is a low cost for most people; those for whom it is a high cost lack the capital to upgrade their buildings.*
    - *Builders rarely occupy their buildings; occupiers have little control over a building's design, construction and hence performance.*
- A cross-Government group if too broad would fail, so should limit membership to DECC, DCLG and BIS, and not include HMT etc. Should limit the remit to energy in buildings, not buildings in general;
- Overseas links would be useful but who would perform that function, given that UK has no public institute for buildings (BRE is private)?
- The project should have three media-ready statements. Be bold; don't just propose a cross-Government body; say that it should replace SAP. Estimate the £bn benefits of enforcing buildings regulations for energy performance.
- Members generally agreed with the points about poor quality and lack of understanding about performance, with one, expressing their shock at the approach to standards that they had seen from their experience with the buildings industry.
- Why would we want tests of buildings performance to be "unobtrusive"?
  - *The political climate is very much against regulations; DCLG views upgrading buildings standards as new regulations, and would apply its 'one in, two out' rule. Some DCLG staff are afraid to highlight issues in case ministers target them for deregulation.*
  - *In response, other members said that we should be bold about the need for enforcement of regulation and should not be deterred by the current politics.*

- It was raised that the issue is not too little regulation, but too little enforcement. The UK is bearing the costs of regulation, training and buildings standards officers, but not getting the benefits of buildings built to the standards. Work by ACE shows that 30% of homes fail the standards set by regulations.
- It was therefore agreed by other attendees that what we need is better and more effective enforcement of regulations - not more regulations.
- North American energy debates often refer to extreme winters caused by the “polar vortex”. The UK will have another cold winter at some point, and this could drive the public’s interest in energy efficiency.
- We should involve HM Treasury – the Lord Deighton report (HMT, Jun-13), treats building stock as a major UK infrastructure block.
- There should be co-ordination not just of R&D, but also of implementation and utilisation.

### Resource Use Strategies Project

Richard Neale (Atkins) introduced this short item, which gave an overview of where the project had reached so far. The first phase of the project, focusing on minerals had concluded that absolute scarcity was not the right question but the responsiveness of markets to balance demand and supply was sometimes ineffective. The next stage was to look at other resources and nexus issues.

Within the nexus component of the work adaptation to climate change and energy infrastructure was a focus. As a part of this it is proposed to hold a workshop on **19<sup>th</sup> September 2014** at the RAEng on the governance issues related to infrastructure interdependencies.

Mark Workman gave a presentation explaining the context for the workshop showing the complexity of gas and electricity infrastructure interdependencies. The workshop will be broader than this, considering water/energy and ICT interdependencies. Mark explained that the ERP was the ideal organisation to engage the water sector on this issue and that members would get most value by sending both a senior management representative to consider strategic issues as well as a technical expert. The Infrastructures Transition Research Consortium, UK Water Research and Innovation Partnership, NERC PURE Network and HM Treasury were key facilitators.

Further inquiries regarding the workshop should be directed at Mark.

### ERP Forward Work Plan & New Project Proposals

Andy Boston presented an overview of workload for the next 6-9 months that showed how new projects would be scheduled. He gave a quick overview of the two Project Initiation Documents (PIDs) that had been circulated with the agenda. He asked members to let him know if they wished to join the steering groups of “Cities” or “Barriers to Community Energy”. He also announced that the “International Engagement” project would be re-started and members were invited to help steer this project too.

**Action: Members to contact Andy Boston to offer support and guidance for the new project steering groups.**

## Transport

Neville Jackson (Ricardo), Vice Chair of European Road Transport Research Advisory Council (ERTRAC), briefly presented ERTRAC's "Energy Carriers for Powertrains Roadmap" which had recently been published. This covered most energy vectors that could be used in road transport (although members noted that ammonia had been omitted).

There followed a discussion on the smaller role for EVs than some anticipated, but the charts of energy density of batteries vs liquid fuels showed why EVs and Hydrogen could never serve significant parts of the market, in particular long distance HGVs. It was suggested that the DfT's strong support for EVs was in contrast to that, but others disagreed, noting that DfT has other programmes too on 2<sup>nd</sup> and 3<sup>rd</sup> generation biofuels. One Member suggested that battery and Hydrogen popularity go in cycles and perhaps a look at the similarities and overlaps is needed.

It was also noted in discussion that unlike many other parts of the energy sector, road transport is quite well co-ordinated in having a forward view that manufacturers were driving to. Neville believed that regulations and standards for EVs and hydrogen refuelling would be produced.

Discussion turned to where ERP could add value. Many felt it would be interesting to know if the UK perspective was in accord with ERTRAC's. Neville noted that he was usually the only UK rep - some attendees therefore agreed to check whether their organisations could attend more often. It was additionally suggested that perhaps ERP could report back on divergence between ERTRAC and other work in the UK. ETI had also looked at infrastructure needs and would circulate a report.

The need for modal shift and understanding behaviour within the transport sector was also discussed; some of the barriers highlighted in other projects also extend to transport. This is something the ERP could look at – perhaps initially as part of the Cities project.

It was suggested that DfT and ERP work together on drafting a PID to kick off some work in the transport area.

**Action: Andy Boston to work with Neil Ebenezer on a PID.**

**Action: David Clarke to send report to ERP – Analysis Team to circulate.**

## 6. AOB

The next meeting would be on 23<sup>rd</sup> July, followed by dinner including a talk by Dieter Helm.

David McKay also suggested that ERP hold a workshop on the three demand reduction papers that we had not been able to arrange for this plenary:

1. Julian Allwood et al, Cambridge - "Sustainable Materials"
2. John Barrett and Kate Scott, Leeds - The Role of Resource Efficiency – Exploring Quick Win Options
3. Paul Ekins, UCL – Green Economy Policy Commission's work

Members agreed this and details are to follow.

**Action: David's office to arrange workshop with UCL and ERP – Analysis Team to invite members.**

The meeting was closed and Members were invited to discuss and network over lunch.