

Call for Input – Future of local energy institutions and governance

Response from Prof Phil Jones (Building Low Carbon Solutions)

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I am one of the leading independent energy consultants in the UK with over 40 years' experience in solving energy problems in the built environment. I was the original author of CIBSE Guide F – Energy Efficiency in Buildings. I am a recognised expert in heat networks having carried out many feasibility studies for UK Local Authority's. I am the lead author of CIBSE/ADE CP1 (2020) Heat Networks Code of Practice which sets minimum standards for heat networks, and these are likely to underpin the forthcoming HN regulatory framework announced in the recent Queen's speech as part of the Energy Security Bill. I previously worked on the development of heat network zoning policy and am currently working on a project to develop a heat networks technical quality assurance scheme.

Overall response

- a) I find it somewhat difficult to respond to the specific questions raised by OFGEM, for the reasons given below, but also the lack of a wider context to energy problems/vectors. Although 'heat' has a significant number of mentions, it is always as an add-on afterthought in the consultation. This misses a key point, that heat decarbonisation is THE big problem in terms of reducing carbon emissions and reaching so called net zero. See BEIS Heat Strategy also CCC report indicating 20% of heat should come from Heat Networks by 2050.
- b) My view is that we are faced with a three-way balance between electricity V heat V gas. As we transition away from using gas for heating, this will inevitably put a huge strain on the current electricity supply system, in particular at a local DNO level where major reinforcement will need to take place. Large scale heat pumps with thermal storage supplying heat networks can play a major role in mitigating this reinforcement. The consultation fails to recognise this overall context and balance.
- c) The consultation fails to recognise that implementing large scale Heat Networks and large-scale heat pumps with thermal storage can reduce necessary peak electricity demands and hence DNO reinforcement. Also that implementing heat networks and heat pumps at-scale will reduce reinforcement compared to local heat pumps at a building-by building level and even more at a dwelling-by-dwelling level.
- d) Much of the consultation is about planning for the supply of electricity alone. This fails to recognise the very direct link between decarbonising heat across the built environment and the future electricity sector. High level figures

suggest that electrifying heat will require a local DNO system x3 bigger than it currently is. Planning needs to be across all the major energy vectors and that will not be achieved through models dominated by the DNO's alone.

- e) Electrification of heat is a phrase that, in itself, indicates, the balance that needs to be found in coming years, especially between now and 2030. This requires very focussed and integrated planning of all the energy vectors, which cannot be done by DNOs alone.
- f) There is very little wide-area ENERGY planning going on at LA and DNO level. And the skills do not exist in LA's or DNOs to do this (yet). For example, the system for establishing costs through the DNOs of reinforcing the local electricity supply for a large heat pump is entirely piecemeal and uncoordinated. It is also a difficult and often opaque process.
- g) The onset of HN Zones represents a shift in the need for local ENERGY planning. The introduction of HN Zones could bring together electricity and heat across whole large areas. Large scale HPs and thermal storage could help electrify heat in a huge way with a massive effect on the local electricity system whilst avoiding greater issue as a result of individual dwelling level heat pumps. Heat networks can help reduce this significantly but only through a well planned multi-vector approach. HN Zoning, with mandatory connection, can drive this mitigation of reinforcement and a real move to decarbonising heat. The HN Zoning consultation proposed local planning bodies, likely to be LAs as zoning coordinators. But we need even wider energy planning than this.
- h) Yes, we need integrated planning at a local level but NOT through the DNOs. This planning should give equal weighting and consideration to the three main vectors electricity V heat V gas. And probably hydrogen in future. The two framework models that are driven by DNO are not the right way to go forward. We need much wider vector planning but through very focussed local bodies. This consultation fails to recognise the very strong link between electricity and heat, and that heat electrification through large scale HNs, HPs and thermal storage can indeed HELP DNOs. Where is this in the consultation?

Call for Input questions

1. Are the three energy system functions we outline (energy system planning, market facilitation of flexible resources and real time operation of local energy networks) the ones we should be focusing on to address the energy system changes we outline?

The heat and gas vectors need to be factored into this in equal measures

2. Do you agree with the criteria we have set out for assessing the effectiveness of institutional and governance arrangements?

A key criterion missing is 'Independence'. Any authority planning across the three main energy vectors needs to act, and been seen to act, in an independent manner. The recent Heat Networks zoning consultation considers the criteria for an energy

planning body (zoning coordinator) and the background (BEIS) policy papers consider this role in some detail. Any new energy planning body needs to be aligned with HN Zoning and should probably take local control of HN zoning.

3. Do you agree with our assessment of how far the current institutional arrangements are, or are not, well suited to deliver the three key energy system functions?

Again, this focuses too heavily on DNO as planners, without consideration of heat and gas. It also fails to take into account forthcoming HN regulation and zoning.

4. Overall, what do you consider the biggest blocker to the realisation of effective energy system planning and operation at sub-national level?

The lack of central and local bodies to carry out energy planning across all three energy vectors is a key blocker. But also the lack of energy skills in LA's and DNO's. It all requires far greater co-ordination, up-skilling and resources.

5. Do you agree with the opportunities of change we outline and the potential benefits they may create?

In general, I agree with these high-level synergies, but it does appear to have a heavy bias towards electricity only.

6. Are there additional opportunities for change and benefits that we have not set out?

Yes, much more co-ordination across the three energy vectors, as discussed above.

7. We set out a number of risks associated with change. Do you agree with these risks and the potential costs they create? Are there additional risks of change and costs that have not been set out?

Again, this focuses almost exclusively on DNO as planners, without consideration of heat and gas. It also fails to take into account forthcoming HN zoning.

8. For each model, we have set out the key assumptions which need to be true for the model to offer the right solution. Which of these assumptions do you agree with?

Again, this focuses almost exclusively on DNO as planners, without consideration of heat and gas. It also fails to take into account forthcoming HN zoning.

9. Out of the framework models we have developed which, if any, offer the most advantages compared to the status quo? If you believe there is another, better model please propose it.

The best model is likely to be entirely new bodies to carry out regional systems planning (i.e. Framework 3) – but with the caveat that this needs interaction and coordination with LA's, DNO's GDNs and HN Zoning Coordinators. Perhaps a new body but including all these stakeholders.

10. What do you consider to be the biggest implementation challenges we should focus on mitigating?

This is covered in my introductory text.

11. Taking into account the varying degrees of separation of DSO roles from DNOs under framework model 1, do you consider there are additional measures we should consider implementing, in particular in the short term (e.g. changes in accountability etc)?

Again, even the question here is only about the electricity vector. What about gas and heat?

12. Are there other key changes taking place in the energy sector which we have not identified and should take account of?

Yes. How are we going to up-skill and resource in order to carry out the necessary wide-area multi-vector energy planning? The lack of understanding, skills and resources will hold this work back.

It may be possible to standardise some elements of energy planning to speed this up, some of which is covered in BEIS HNDU publications about Heat Networks which could perhaps be modified/extended.

13. What do you consider to be the most important interactions which should drive our project timelines?

There is an immediate need to get some coordinated energy planning happening. The drive to net zero by LA's and many originations should drive this timescale. Many organisations have committed to net zero by as early as 2030.