

Reference

Future of Local Energy Institutions and Governance
Call for Input

Date

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Victoria Low

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Dear Victoria

Call for Input: Future of Local Energy Institutions and Governance

As the largest gas distribution network in GB, we have championed a whole system approach in our work on regional energy planning with our electricity distribution colleagues, particularly in the North West where hydrogen development is most advanced. We have also been a driving force to implement whole system solutions for local authorities within the Energy Networks Association Open Networks Whole Systems workstream and contributing to the Energy System Catapult work on Local Area Energy Planning. We are strong advocates of whole system thinking and robust holistic energy system planning.

We are playing a leading role alongside the other gas networks to demonstrate the gas grid's capability to deliver hydrogen to communities across the UK, to achieve net zero at least cost and with least disruption. We believe hydrogen will play a significant role in a decarbonised whole energy system alongside and supporting other credible large-scale alternatives, in an optimised net zero transition plan.

An efficient transition will need to be designed to understand and meet the needs of every affected household and business, as to successfully deliver net zero, active support will be required from the general public, with change welcomed inside over 20 million homes. We believe this can only realistically be achieved with locally accountable delivery bodies, operating within a coherent national planning framework. We therefore fully support the need for effective whole energy system planning, coordinated at both a national and regional level.

A coordinated and coherent approach to both national and sub-national energy system planning, is the foundation to a least cost transition to net zero. We welcome this Call for Input on the sub-national process and agree there is a need for a new approach to coordinate effective whole system local solutions for customers. We believe there is a role for a body that is independent and can also cover all vectors including gas, electricity, heat networks or off grid solutions as explored in option 3 in the consultation, and that this should be further developed.

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However, we think it is critical in developing the whole system solutions that:

- a. the development of the sub-national process is **coordinated and developed together** with the national process and not done in isolation;
- b. more focus is placed on the **integration of whole system issues beyond immediate electrification needs** such as for long-term heat, power and transport energy vectors, and;
- c. that we fully define the **scope of all the planning functions** required to deliver the required outputs.

This will allow a true whole system approach to be planned and consistent and coordinated solutions delivered nationally and regionally.

We appreciate that the initial focus has been on whole system issues across the electricity transmission and distribution interface and we understand the need to ensure progress is maintained in the short-term on these issues. We would suggest that the focus should not be on pursuing material change to existing institutional arrangements on electrification-only issues, but should be on solving the wider issues of full whole system planning across heat, power and transport for the long-term.

The challenge of long-term heat, power and transport decarbonisation will require a fully functioning whole system planning approach across gas, electricity, heat networks and market infrastructure, fully integrating new opportunities such as hydrogen. We would therefore recommend that further work is done to expand the definition of the energy system planning functions to inform the longer-term options, particularly to clarify and define what is in and out of scope within the planning process and the full range of roles required.

To support this, we have set out a framework within our answers below (Q10) that we think would build a strong foundation to create a robust scalable planning process that can support the delivery of emerging Government policy, and a least cost net zero transition in the longer term. This can be summarised in five steps:

1. **Establish** whole system scope (what vectors need to be considered in planning)
2. **Identify** all the high-level energy system planning process functions
3. **Map** to existing organisations
4. **Assess** institutional gaps and weaknesses
5. **Address** shortcomings to create the best solution

We believe the process we have set out should be applied to considering together the whole system planning roles for both the Future System Operator at a national level and the sub national process in a consistent and coordinated way.

Without such an approach, we believe there is a high risk that options discussed will only provide partial solutions and not be fit for purpose, and will present barriers to achieving net zero and delivering Government policy in the most effective way.

We believe it is essential all parties across the industry work together as the impact is so wide ranging. We would be keen to play an active role and work closely with the Future System Operator and our other colleagues across the energy networks to support Ofgem in developing this further.



On the attached pages you will find Cadent's response to the specific consultation questions.
Please get in touch if you would like us to expand on any of the points made in this submission.

Yours sincerely

Stuart Easterbrook

Head of Net Zero Energy Frameworks, Cadent



Call for Input: Future of local energy institutions and governance

Question 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?

We agree that the three functions are important and reflect in particular the current challenges in the electricity sector. We know the electricity system is likely to grow and flexibility services and efficient real time operation of the networks will be vital, both to keep costs down and to ensure the lights stay on. Initiatives in this space can be taken forward for electricity and the benefits realised in the shorter term.

Whole energy system planning across a number of vectors such as heat, transport and power is a harder problem to solve. Coming at it from only an electricity system angle is not advisable and will result in a framework incapable of dealing with the much bigger challenges we will face with heat decarbonisation.

For example, whether we change most household heating to hydrogen, or to an electric heat pump, or to something else, requires strong, trusted and credible organisations to represent and protect the consumer, to explain the options, and to support them through the change programme. This cannot be left to just an electricity or gas network organisation, but a body that is independent that can also cover all vectors including heat networks or off grid solutions.

Any regional planning body set up over the next few years must be capable of delivering this consumer focussed local planning and delivery service. If it is not set up for this, then it is likely to be side-lined almost immediately. There is therefore considerable value in either delaying any large-scale regional energy system planning role until there is greater certainty, or completing a piece of work to determine what sort of features such a body will require, and ensuring any early roll out is compatible and scalable.

We therefore fully support the need for a robust, trusted, credible, independent, whole energy system regional planning function to deliver net zero, that can also support the end consumer through the energy system transition.

The problem statement for this Call for Input asks what functions should be focussed on to address the energy system changes outlined. There is however very little detail on exactly what the “energy system changes” are. The detail included refers to electricity system flexibility services, and if this work is to be applied more widely, a much more detailed assessment of the planning function roles across the relevant vectors is required.

For example, there are references made to a “national ambition for electrification” and “...to realise the ambition around electrifying heat and transport.” With the vast majority of premises heated by gas, and Government policy on the decarbonisation of heating not expected for a number of years, the scope to electrify heat is very limited, and must be carefully defined to ensure only low or no regrets actions are supported and households protected from making ill-informed decisions. Failing to do this will result in higher costs to consumers, and high regrets investment could tilt the economic balance by making more expensive net zero options look incrementally cheaper.

The scale of change to decarbonise heat is vast. Whether it is converting large parts of the gas network to hydrogen, or decommissioning large sections alongside a massive upgrade to the electricity system to accommodate a 2/3/4 times increase in peak capacity. With this scale of change, there is likely to be a significant element of central planning, and mandating, both at a national and sub-national level. Any new arrangements must be capable of supporting such an approach.



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

We agree with the criteria identified with the following clarifications and additions.

In order to deliver a net zero energy system, a huge amount of change will be required across the UK, as well as in most homes, businesses, schools and hospitals. Decision making, including the provision of funding will need to happen at pace to stand any chance of meeting our 2050 ambitions. **Agility** in decision making must therefore be a criterion in assessing the end-to-end options. This would need to be included in governance models for the networks and any enabling Ofgem or other Regulatory body's involvement.

Credibility is important as a measure but must incorporate impartiality and avoid conflicts of interest. For example, an electricity-centric body making decisions impacting the gas network would not encourage the best whole system decisions. The structure, capability, and governance of organisations making important whole energy system decisions must be a key design criterion and may need to be enforced in an appropriate licencing regime.

We agree with the importance of a democratic input at the local level however this must be closely connected to funding and 'who pays'. For example, it would not be credible if a sub-national region could decide on a higher cost course of action that UK wide energy customers had to pay for.

Finally, we believe an additional criterion should recognise the importance of **system reliability**. This can be taken for granted with the current energy systems, but consumers and UK industry must be protected from any reduction in reliability and security, which may be small scale in the shorter term, becoming increasingly visible over time. A less reliable energy system will clearly have an impact on investment decisions across industry, including at a regional, national and international scale. A higher level of reliability must also be transparent and be presented with a robust cost benefit analysis.

Question 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?

Our electricity colleagues are much better placed to comment on their successes in developing DSO arrangements and flexibility services. We would note however that in considering the effectiveness of institutional arrangements, it is important to include all the key players, which must include the role of Ofgem.

We do not believe the current institutional arrangements are delivering these key energy systems function from a coordinated whole system perspective and are not effectively integrating gas, electricity and heat network solutions.

As an example, with RIIO-2 starting for the gas networks 2 years ahead of the DNOs, we are starting to see how the RIIO-2 flexible funding mechanisms are working in practise. With re-openers taking many months and potentially years to progress from initial discussions to funding being granted, there would be questions as to whether an Agility criterion is currently being satisfied. A more agile regulatory framework will be required which values and supports investment decisions made at pace, such as Ofgem are developing to underpin the Energy Security Strategy. We believe this will need to be a strategic component of the RIIO-3 framework for gas as well and will be vital to ensure consumers and the UK as a whole are not exposed to the direct and indirect costs of delay.



With this piece of work looking at regional energy planning, to be effective it must deliver clear and efficient funding decisions. This may mean different forms of regulation, and we would welcome the energy networks having a formal role in the funding processes linked to the regional planning function. For example, a regional body being able to approve the needs case for a network development could speed up investment decision and free up Ofgem to focus on mechanisms to ensure the requirements are met as efficiently as possible.

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

We believe the biggest blocker to the establishment of an effective energy system planning framework, is the lack of a detailed and complete assessment of the functions and roles. For example, defining the vectors within the whole system planning requirement, setting the scope to include both national and sub-national as well as roles, outputs and deliverables that need coordinating for each. A clear definition would also provide clarity on the capability of the energy system planning functions to enable centrally planned developments, as well as supporting customer and market led change.

We have set out in our response to Q10 a framework which if followed, we believe would provide the necessary detail, and enable the design of a coordinated holistic energy system planning approach, that is capable of dealing with the major challenges we know we will need to address in the next few years. Without such an approach, there is a high risk that anything implemented in the shorter term will be a partial solution and not be fit for purpose. Considerable industry resource would have been wasted, and the required enduring solutions will take longer to put in place.

With the energy system about to go through much more radical and far-reaching change than is properly appreciated by many key stakeholders, a longer-term holistic view must be factored in now, if we are to stand a chance of delivering a net zero energy system.

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

At a high level we agree with the opportunities identified, although we note they are articulated primarily from an electricity perspective.

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

As set out above, we think there is a vital customer protection and support angle that is not discussed. We cannot decarbonise every gas and electricity customers in the UK unless we put their needs at the heart of our design of an effective whole energy system planning model. We must gain the active support of 100% of households and businesses, as we will not meet net zero with anything less.

Question 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?

Unless a holistic approach to energy system planning is taken at this stage, with a clear assessment of all the required roles and functions, and with the ability to deliver upcoming policy changes, there is a high risk that shorter term changes will become immediately redundant, wasting the considerable contributions from all involved. For example, Government policy could conclude a national or regional delivery body is required to deliver net zero home heating. This would supersede any sub-national



planning processes created over the next few years that was not cognisant of this potential future.

A disconnect by developing national and sub-national energy system planning independently with no or limited integration, is highly likely to result in an overall plan that is sub-optimal from a UK plc perspective, and undeliverable when all the regional plans are put together. It will be crucial to align and join up the FSO role nationally, with any sub-national institutions.

With sub-national planning taking place within a well-designed national framework, there is also the opportunity to address variations in regional ambitions e.g. who pays for faster/slower local ambitions.

Question 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?

The first two models are entirely electricity focussed and our colleagues in other energy networks are much better placed to comment.

For Models 3 and 4, we do not feel the problem statement and options are defined in sufficient detail to provide detailed comments to answer this question. We set out below in our answer to Q10 a framework for how we could develop and assess these models.

Question 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.

In the short term we believe Model 1 could be taken forward to deliver identified benefits whilst further work is completed to assess the required roles and functions to identify and deliver a whole system energy system planning approach such as outlined in Models 3 and 4.

Our strong recommendation is to complete further work to establish a holistic approach to national /sub-national whole energy system planning. Ahead of this vital piece of work, embarking on significant market restructuring, such as that required for Model 2 is not appropriate.

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

The biggest implementation challenge we see is failing to recognise the issues and risks outlined above and launching changes that require significant industry involvement, but which are quickly overtaken by events.

This challenge can be properly addressed to deliver a robust holistic planning framework by following a more structured whole system approach. With our close involvement with Local Area Energy Planning and developing whole system solutions for Local Authorities with the Open Networks project, we have already developed thinking on how this could work.

We would suggest 5 key steps are followed:

1. Establish the whole system definition scope

Set out what vectors are in scope for any national or sub-national energy system planning function. If this included all regulated energy networks the scope would cover electricity, methane, hydrogen, heat, and CCUS networks.



2. Identify the High-Level Energy System Planning Process Functions

The Problem Statement - Define what we need the planning process to deliver. Our initial thinking has broken this down into five components:

- I. Forecasting production and demand that the networks will be required to support. This would include identifying and assessing customer and stakeholder needs, managing new connection requests, providing information to consumers, and building supply/demand scenarios to inform Government policy development.
- II. Identifying the network requirements across all vectors including asset investments, maintenance, flexibility services and storage. This would also cover providing physical network designs for future scenarios, managing uncertainty, and delivering an operable network to each system operator.
- III. Identify what is required to regulate the networks and enable system and market operation. This would include commercial balancing, agile funding, clearly defined roles and responsibilities, and consumer protection.
- IV. Managing the net zero transition, developing, and maintaining the overall network infrastructure delivery plan, updating the plan in response to events, liaison and coordination with stakeholders and other delivery bodies, and ensuring clear accountability for consumers.
- V. A clear definition of the timescales governing the handover and interface between the planning functions and system operation.

3. Map to existing organisations

Produce a matrix of who does the in scope planning activities, noting that whilst existing organisations will currently carry these out in some form, nobody is doing this on a whole system basis.

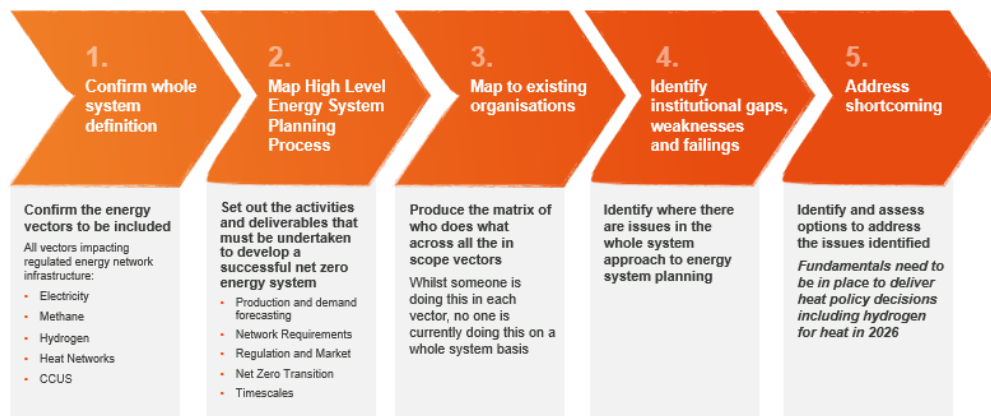
4. Assess Institutional Gaps and Weaknesses

Identify where there are issues with the whole system approach to energy system planning. In particular the ability to deal with customer-led developments and/or centrally planned solutions (whether national or regional).

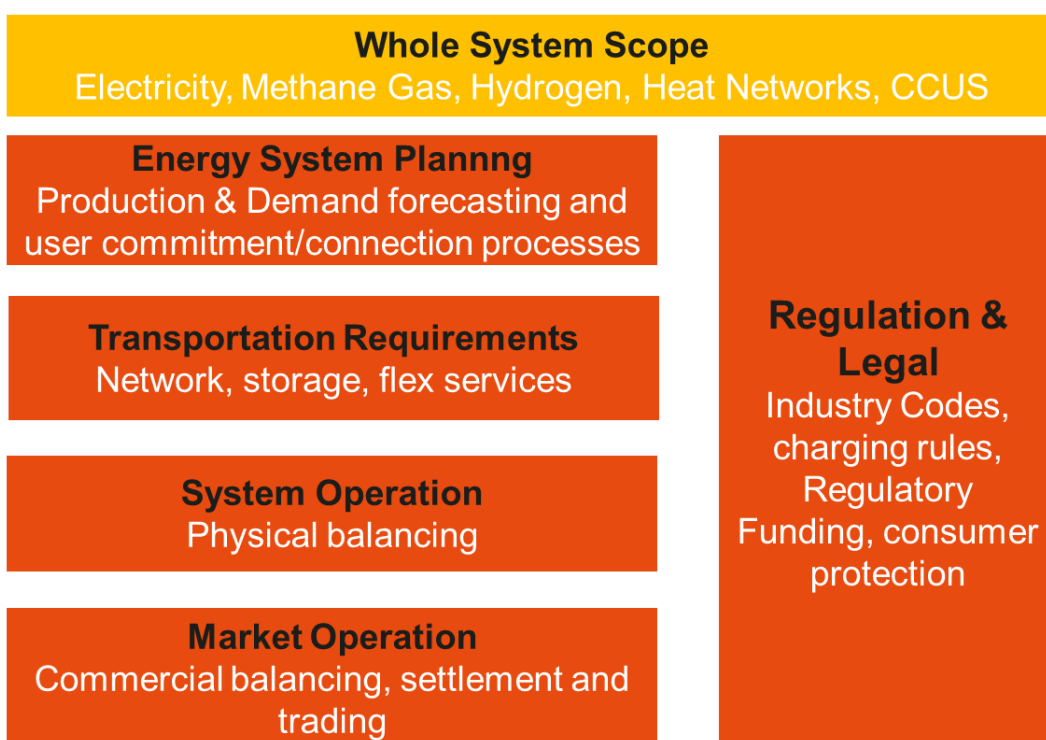
5. Address shortcomings

Identify and address options to address the issues identified.

This framework is illustrated below, and we would be happy to work with Ofgem and our colleagues in the other energy networks to take this forward.



A high-level overview of the deliverables from the first two steps of the process which is needed to inform, develop, and assess the options is set out below.



Question 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)?

Our electricity distribution colleagues are much better placed to respond to this electricity focussed questions.

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

We know most UK households will need to transition away from their current forms of home heating. Whilst the key decision on the future of the gas grid and hydrogen are still to be made, many people will be confused by the messaging about alternatives. Decisions on how to decarbonise your home heating are complex and difficult, and there is the risk that many will make ill informed decisions today that they may quickly regret. This risk could be exacerbated by unscrupulous parties' mis-selling expensive



low carbon heating systems to vulnerable households. We do not want to see any of our customers, taking expensive decisions to change their gas central heating, only to find a few years' time that they could have opted for a better, least disruptive alternative such as hydrogen.

We would urge any sub-national energy system planning processes to have clear responsibilities to protect households and businesses, to ensure everyone is taking well informed no/low regrets decisions.

Ahead of major policy decisions, or their implementation, we would also expect that an effective national and sub-national whole energy system planning function would ensure significant infrastructure investments are taken that keep all credible options open to electricity and gas consumers. If this is not done, then the UK will not be able to achieve net zero at least cost.

Heat decarbonisation, however it is achieved, will result in changes to energy infrastructure that will dwarf recent changes and those envisaged in the short to medium term. This process must recognise this; most importantly by producing an effective energy system planning process capable of delivering heat policy at this vast scale.

Prioritisation and deployment of Ofgem's resources should recognise that the development of a robust longer term whole system planning solution is likely to be of much greater value than shorter term flexibility solutions, that could soon be overtaken by larger scale change. Care should be taken to understand the real and relative value of flexibility services in electricity as we make this transition. When the incremental capacity needs are fairly modest, there is clear benefit of flexibility services allowing new loads and sources of production to connect more quickly, ahead of longer-term asset-based solutions. However, if there is large scale electrification of heat, peak capacities will increase in multiples, which can only be delivered securely by asset investments. If you need to double the electricity grid capacity in an area, flexibility services are unlikely to scratch the surface.

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

As we have set out above, we believe much more work is required to define the problem statement and identify solutions with a greater degree of detail before this question can be answered.