



Low Carbon Hub Response to the OfGem Call for Input on the Future of Local Energy Institutions and Governance

Introduction

The Low Carbon Hub (LCH) is a social enterprise working in Oxfordshire that's out to prove we can meet our energy needs in a way that is good for people and good for the planet.

We are part of the Project LEO consortium, one of the 4 smart energy demonstrators funded by Innovate UK. We bring to that project:

- Our portfolio of Distributed Energy Resources (DERs), 46 solar rooftops, 1 440kWe run-of-river hydro, 1 19MW solar groundmount, and 1 30kWh battery;
- Our 2,000 investor shareholders and our 40 community group shareholders;
- Our decade of experience in working with our community group members, our local authorities and our two universities to develop innovative partnerships to accelerate the transition to a zero carbon energy system.

The Project LEO consortium has made its own response to this consultation, led by Scottish and Southern Electricity Networks (SSEN). LCH is making a separate contribution focusing on how to understand the twin issues of geography and scale in defining what 'regional', 'local' and 'community' might mean in designing the local institutional and governance architecture for the future, particularly in England.

Our aim in making this response is not to advocate for any one solution, but to provide insights that may be helpful in suggesting activities and foci for the upcoming set of stakeholder workshops that are being planned.

Consultation questions addressed in this submission

This submission responds mainly to Q9: '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.' Our aim is to show how the world looks from the very embedded, bottom-up local and community point of view as a way of starting the conversation rather than answering the second part of the question.

We would make two more general remarks in preface to the rest of our paper:

- Firstly, we are responding to suggestions throughout the Call paper that democratic accountability may be important for the future of energy system planning. We would agree with that, and so we would suggest that the 'credibility' criterion for assessing effectiveness should either be replaced by, or supplemented by, the notion of 'legitimacy'.
- Secondly, we note that this Call does not cover institutional and governance arrangements for Peer-to-Peer services. We are disappointed by that and would encourage Ofgem to revise its approach. We think it is very important that system planning is considered 'in the round' and we know from Project LEO so far that these flexibility services are often of greater interest to local actors than DSO-procured ones, and could make a major contribution to efficient management of the system.



What does 'local' mean?

We find that the Call paper uses the words 'local' and 'community' often but without a clear definition for either. The table below shows how the word 'local' is expressed in the tiers of local government in England and how those scales might relate to the tiers of the energy system architecture.

What does local mean?			
DER level	Distribution network level	Voltage	Democratic level
	DNO area, eg SEPD	>400,000	National
Utility scale DERs	Bulk Supply Point/Grid Supply Point	400,000 132,000	Upper tier: Counties Metropolitan Counties London Boroughs Unitaries
Large scale DERS	Primary substation	132,000 33,000	Lower tier: Districts Metropolitan districts
Small scale DERS	Secondary substation	33,000 11,000	Lowest tier: Parish Councils Town Councils Parish Meetings (<200 voters)
Behind the meter DERs	Feeders MPANs	11,000 230	Ward councillors Voters

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We might conclude from this that the largest scale at which the concept of 'local' applies is at the Upper Tier of local authority and the smallest at the Lowest Tier of the parish or town council. The term 'Grid Edge' is often applied to describe that 'place' where the major part of the energy transition is to happen, ie where EVs, heat pumps and most decentralised DERs connect. In discussion with Project LEO partners, we have understood the Grid Edge to be at the primary substation scale and below. And so it would seem to us that future local energy institutions and governance will need to address that scale of activity in a robust and resilient way, and one that is open and transparent, ie has legitimacy.

If we apply this understanding of scale to Oxfordshire, the table below shows the institutions and numbers we would be dealing with at each scale. If our aim is to achieve a solution that is easy to implement and 'at least cost', we would probably conclude that it would be good enough to have the DNO/DSOs working with the County Council as the Regional Planner and perhaps involving the City Council and the 4 District Councils in a consultative capacity – in a way that is analogous to transport planning. No local authority tier is currently tasked with energy system planning, however, and so skilling up to take this role on effectively would be a major undertaking and therefore probably need good, rather than least-cost, resourcing.



Distribution network level	No.	Democratic level	No.
Bulk/Grid Supply Point	5	Upper tier: <u>Oxfordshire County Council</u>	1
Primary substation	63	Lower tier: Oxford City Council District Councils: Cherwell, South Oxfordshire, Vale of the White Horse, West <u>Oxfordshire</u>	5
Secondary substation	7,420*	Lowest tier: Parish Councils Town Councils Parish Meetings (<200 voters) Ward <u>councillors</u>	235 15 68 112
MPANs	277,000 households 35,000 VAT-registered businesses	Voters	517,486

* SSEN total number owned – from RIIO-ED2 business plan - multiplied by Oxfordshire proportion of households

Dealing effectively with the Grid Edge in this scenario would not be easy, however, especially at secondary substation level and below where numbers of assets and people are very much larger. This is where it may be helpful to consider the meaning of the word ‘community’ and how communities can take part in local energy governance. In our work on energy equity and ‘smart and fair neighbourhoods’, as part of Project LEO, we have taken ‘local’ to mean the tiers of local government, all of which have legitimacy through local elections to Parish/Town Councils, tier 2 authorities and tier 1 authorities. We have then taken the word ‘community’ to mean self-defined areas where local activists see a coherence and within which they can work with neighbours or with other community groups to achieve a level of informal legitimacy for what they do. LCH works with 40 such self-defined communities in Oxfordshire. Activities can be formalised through the development of a Neighbourhood Plan and it may be interesting to consider the extent to which ‘hyper-local’ LAEPs could be produced within such plans or alongside them.

The potential importance of Local Area Energy Plans (LAEPs) has emerged through the course of our involvement in Project LEO. The table below shows the scale at which these are currently, and could potentially, work. We have shown how the 5 community-led ‘Smart and Fair Neighbourhood’ (SFN) projects we are working on in Project LEO would fit into these scales. We are also working with the Energy Systems Catapult team to apply their tools and methods to the SFN located at the Primary Substation scale. Our hypothesis is that energy system planning will work best if it engages the whole of the Grid Edge by working at ‘nested’ scales where the feeder, the secondary substation, the primary substation and the ‘region’ can be treated separately or as a whole.



Local Area Energy Plan Scale



Distribution network level	No.	Democratic level	No.	
Bulk/Grid Supply Point	5	Upper tier: Oxfordshire County Council	1	Current scale of LAEPs is c. 300,000 people
Primary substation	63	Lower tier: Oxford City Council District Councils: Cherwell, South Oxfordshire, Vale of the White Horse, West Oxfordshire	5	Eynsham SFN trialling 1 PSA
Secondary substation	4,000	Lowest tier: Parish Councils Town Councils Parish Meetings (<200 voters) Ward councillors	235 15 68 112	Osney Supercharge trialling 1 SSA with c. 300 households and c 5 businesses Deddington and Rose Hill working in areas with multiple SSAs
MPANs	277,000 households 35,000 VAT-registered businesses	Voters	517,486	Springfield Meadow working with 23 households and 1 SSA

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We understand that the resources required to achieve this are not trivial, but think that elegant approaches to partnership could be designed both in terms of producing and stewarding the delivery of such interlocking plans. In the table below, we have looked at the proposals in SSEN's RIIO-ED2 business plan to give us a sense of how those might match with the levels of ambition already expressed for Oxfordshire in the 'Pathways to Zero Carbon Oxfordshire Report' (PAZCO) produced by Oxford University and funded by the Local Enterprise Partnership¹.

Overview of SSEN RIIO-ED2 proposals: Accelerated progress to Net Zero



Forecast	Oxfordshire @7%	Per LA	Democratic level	No.	Full cover
1.3m EVs	91,000	18,200 286	Upper tier	1	PAZCO 195,000
800,000 heat pumps	56,000	11,200 35	Lower tier Lowest tier	5 318	PAZCO 120,000
8GW generation and storage	560MW	112MW	Lower tier	5	PAZCO 1,000
19% of 106,000 secondary substations with LV monitoring	19% of 7,420 = 1410 c. £1.69m to install	282	Lower tier	5	c. £8.9m for 7,420
Planned investment	Oxfordshire @7%	Per LA	Democratic level	No.	
£1.039bn 2023-28	£72.73m total £14.55m p.a.	£72.73m total £14.55m p.a.	Upper tier	1	PAZCO £450m
£12.3m LAEP support 72 Local Authorities 200 communities	£861,000 5 Local Authorities 14 communities	£172,200 per LA £61,500 per community	Lower tier Lowest tier	5 318	c. £3.78m for 63 PSAs
£26.4m biodiversity net gain programme	£1.848m 140 hectares trees	£370k 28 hectares trees	Lower tier	5	PAZCO 430 ha/annum
£500m pa 'Powering Communities to Net Zero' fund	£44,800pa	£8,960 p.a.	Lowest tier	318	

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¹ [PAZCO reference]



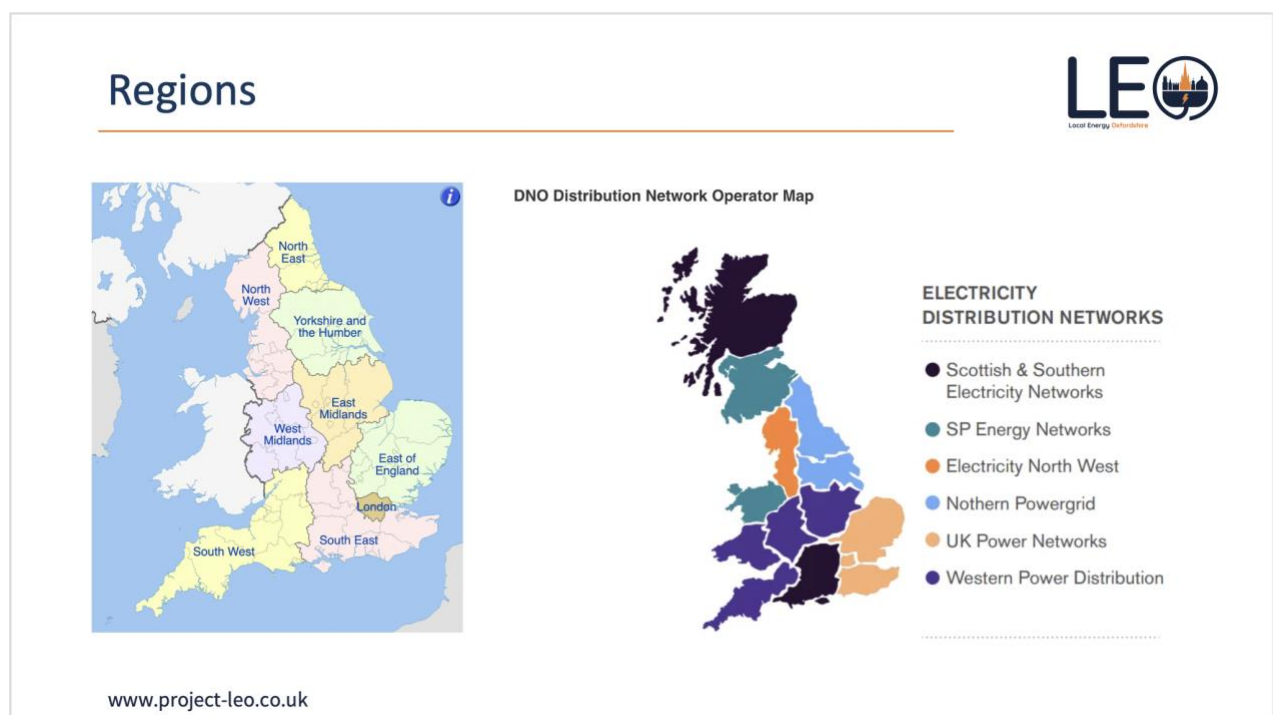
We do not attempt to draw firm conclusions from this short exercise; what we think it does suggest, however, is that aligning of ambition and strategy may take some time in the early days of any new institutional architecture.

We would also highlight from it two numbers in the right-hand column that are not drawn from the PAZCO report but which are derived from real numbers generated by Project LEO activities. Our experience so far of the power that transparent network information can have in catalysing new projects at community scale, suggests strongly to us that getting visibility of the whole network, and producing plans for the whole network should be a priority for the early years of the ED2 period, and would underpin the effectiveness of any new local institutional architecture. Our broad estimate of £12.68m for putting LV monitors into all secondary substations in Oxfordshire, and for producing LAEPs for all 63 Primary Substation Areas, is well within the ballpark of the ED2 business plan investment proposals for Oxfordshire, although it would require some re-prioritising. We would very much like to work with local partners to develop our understanding of this issue, and potential proposals for addressing it, as part of the stakeholder workshop process for this consultation.

Such an exercise could also test our understanding of how the 'regional' scale would work. How does the rather small, peri-urban geography of Oxfordshire work in relationship to vast metropolitan areas such as the West Midlands Combined Authority area, or the Greater Manchester Combined Authority area, or the much more dispersed and remote Highlands and Islands area?

What does 'regional' mean?

Given that England no longer has Regional Development Agencies (RDAs), it is difficult to understand this concept now in terms of local governance. We have done some mapping work to show how complicated it might be to develop any sense of the regional scale in England, given that energy system geography does not map at all clearly onto local government geography. The slide below shows the old English RDAs on the left overlain on the Tier 1 local authorities map and the DNO areas on the right.





It can be seen that some areas seem to map easily between the two, eg East of England, others fit together with some fuzziness at the edges, eg North West, North East, but some look much more problematic, particularly in mid-southern areas of England.

The slide below shows what happens when you overlay the SEPD region onto the local government areas. The energy system region spreads across both the old South East and South West RDAs and includes, by the looks of it:

All of: Isle of Wight, Hampshire, West Sussex, Berkshire and Wiltshire

Most of: Oxfordshire and Dorset

Parts of: Buckinghamshire

Bits of: Somerset, Gloucestershire and London



Mapping this reality onto any of the four framework models included in the Call is very difficult.

Conversely, trying to work Oxfordshire as a single region would have its challenges given that it has a bit of WPD in the north around Banbury and a sliver of UKPN around Thame.

Comments on the framework models

Based on the work described above, we have made some very preliminary comments on the 4 outlined framework models and include those, for what they are worth, in the appendix to this paper. In order to move the conversation on, we wonder whether it might be fruitful to take a different approach to this problem in a stakeholder workshop. We envisage a facilitated 'back-casting' exercise where we attempt to identify the benefits we need to achieve from the new architecture by 2028, how we might evolve existing institutions to that place over time, and what resources might need to be applied in order to move from here to there effectively and efficiently.

Appendix 1: comments on 4 framework proposals

Framework Model 1: applied to Oxfordshire



FSO: national level as now

DNO:

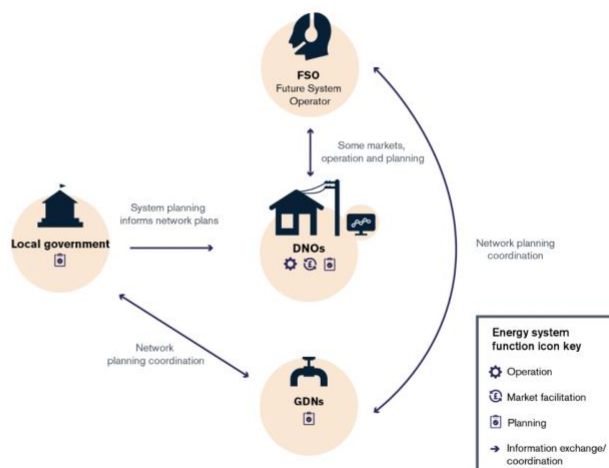
SSEN owns both DNO and DSO functions – Swiss holding company

Local Government:

Oxfordshire County Council? Does not currently do 'coordinated network system planning'. How does that work with SEPD area? Including: Berkshire, Hampshire, Isle of Wight, West Sussex, Wiltshire, Dorset (most of), Oxfordshire (most of), Buckinghamshire (part), Gloucestershire (bits), Somerset (bits) and some boroughs of west London.

GDN:

SGN – Canadian owned
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Framework Model 2: applied to Oxfordshire



FSO: national level as now

iDSO: owns DSO functions, public or private ownership, could be an Oxfordshire regional DSO covering SSEN, WPD and UKPN areas. Could be a social enterprise. Could go very local as transition develops.

DNO:

SSEN owns DNO functions

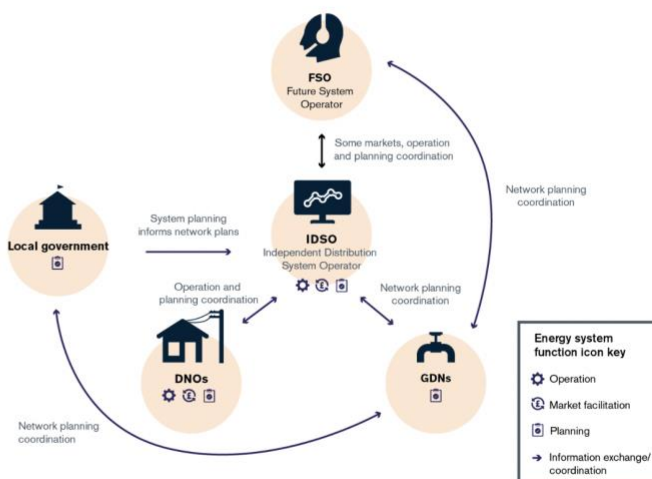
Local Government:

iDSO to work closely with Oxfordshire local authorities. Could be a JV between them which would help skills development.

GDN:

SGN – Canadian owned

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Framework Model 3: applied to Oxfordshire



FSO: national level as now

Regional System Planner and Operator: whole system planning, market facilitation and some operations; could be Oxfordshire region as for model 2, owned by a social enterprise structure that could be a JV of local authorities

DNO:

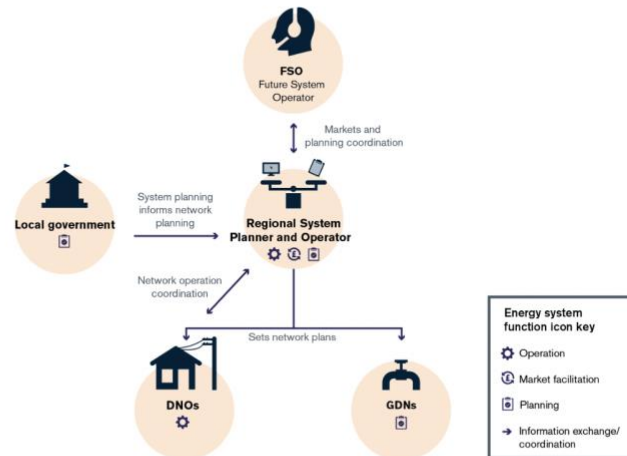
SEEN owns DNO functions

Local Government:

LAEPs at Oxfordshire and PSA level could be done quite quickly to speed up transition

GDN:

SGN – Canadian owned



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Framework Model 4: applied to Oxfordshire



FSO: national level as now; could include the **IDSO** function to facilitate markets

Regional System Planner: whole system planning; clear opportunity for Oxfordshire local authorities to ensure cross-vector coordination and proper heat planning

DNO:

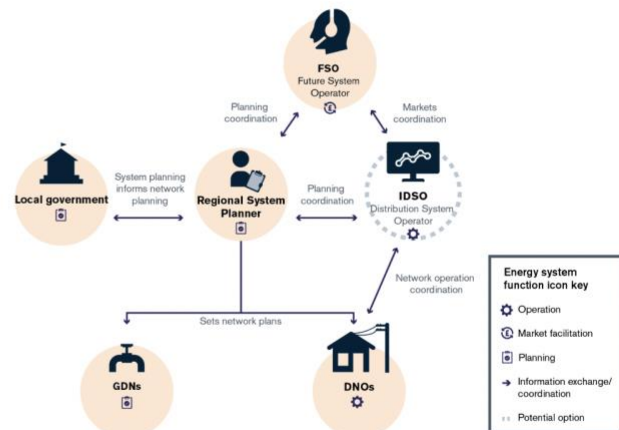
SEEN owns DNO functions

Local Government:

LAEPs at Oxfordshire and PSA level could be done quite quickly to speed up transition

GDN:





SGN – Canadian owned



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Overview of models: Oxfordshire



	Internal separation of DSO* roles within DNOs*	Independent Distribution System Operator(s) (IDSO)	Regional System Planner and Operator(s)	Interacting organisations
				
Roles	No change	Would like <u>Oxfordshire</u> IDSO locally owned – but concerned about skillset required. Maybe better done with national-level concentration	Would prefer <u>Oxfordshire</u> regional system planner and operator locally owned – skillset for most of this credibly available, though operator role a concern	<u>Oxfordshire</u> has a rich innovation ecosystem that could handle cross-vector planning and action very well if the IDSO role were done by the FSO
Features	DNO scale does not work well for <u>Oxfordshire</u> Issue of remote private ownership Concerns about skillset, particularly digital	<u>Oxfordshire</u> is a region given that it has its own Local Enterprise Partnership Potential for very strong coordination of institutions between LA boundary and DNO boundaries	<u>Oxfordshire</u> is a region given that it has its own Local Enterprise Partnership Potential for very strong coordination of institutions and across vectors, particularly heat	Potential for very strong coordination of institutions and across vectors, particularly heat – at very local level too Potential for local ownership of regional planning institution
Key assumptions	Concern about conflict between DNO and DSO role – especially given experience of fragmented internal structure and general lack of resource LEO experience of difficulty coordinating activity	Concern potentially about concentration of skills required to do the IDSO role effectively at the <u>Oxfordshire</u> scale	Concern about skills required for the operation role Very interested in the potential of coordinating planning across vectors Potential to transition quickly into very local area planning and action	Strong local institutions and history of innovative partnership working could make the most of expert bodies working together This option is the most flexible for different geographies across the UK
Ease of implementation	Significant upskilling required to make DNO fit for purpose Significant coordination effort required so LA resource would be an issue	Would need whole new body with significant new skills	Would need whole new body with significant new skills	Base model could assign roles while the case for new locally-owned bodies could be explored

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