

Place & Resources Scrutiny Committee

26 February 2023

Grid Capacity Review

For Recommendation to Cabinet

Portfolio Holder: Cllr R Bryan, Highways, Travel and Environment

Local Councillor(s): N/A

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Report Status: Public

Brief Summary: Grid constraints are a drag on decarbonisation, economic growth and development. In some cases, projects that are seeking to connect to the grid are being offered connection dates as late as 2036. Consequently, it is causing costs and delays, and in some cases impairing project viability entirely. Resolving this will require working with network operators to strengthen the evidence for investment need. Moreover, significant national reform presently underway presents broader potential opportunities to strengthen how we collaborate with network operators, and to play an active role in the governance of the energy system. The report presents the findings of a Place and Resources Scrutiny Committee inquiry into the impacts, challenges and opportunities of grid constraints and the associated reforms. It presents a set of recommendations on how the council can best position itself to mitigate the risks and exploit the opportunities – with particular regard to how the network is planned, governed, invested in, reflected in our own policy and decision-making, and how we can strengthen our relationships with network operators.

Recommendation: To submit the recommendations of the Grid Capacity Task & Finish Group within Section 4 to Cabinet on the council's future approach to the strategic risks and opportunities regarding the electricity network.

Reason for Recommendation: To ensure that the council is best placed to mitigate the risks and exploit the opportunities associated with the future of the electricity grid.

1. Background

- 1.1. The energy crisis threw into sharp relief the challenges posed by the UK's lack of energy self-sufficiency. This strengthened national ambition to transition towards an energy system that is cleaner, more secure, and more affordable. We are consequently amid a period of major change for the UK's energy system.
- 1.2. Government's overarching ambition is to decarbonise electricity by 2035. Major progress has already been achieved, but there remains a considerable way to go. It is widely acknowledged, however, that traditional processes, policy and regulation are not suited to this challenge. A range of barriers are commonly highlighted, including constrained grid capacity, planning and regulatory consenting processes, energy markets, and global competition for investment to name just a few.
- 1.3. Discussion typically centres on renewables. Yet the future energy system requires not just cleaner ways of *generating* energy, but fundamental changes to how we *store, transport, supply and use* it. In particular, there is a fundamental challenge to ensure that the UK's 'creaking' grid is itself fit for purpose to accommodate new low carbon generation and storage assets – alongside the significant growth in demand for power from the electrification of heat and transport. Shortcomings in the system have already yielded a heavily constrained grid that has failed to keep pace with the pace of new generation and demand. This is yielding lengthy delays to attaining connections, and costing connecting customers and bill payers alike.
- 1.4. The challenge cannot be understated: grid constraints are now commonly cited as the single biggest barrier to decarbonising power. But if unaddressed its strategic significance is broader, presenting a drag not just on decarbonisation and energy security, but also on business expansion, development, investment and economic growth.¹ Solving it, however, could unleash benefits for households, communities and the economy alike.
 - 1.1. This is not just an issue for the future. Local projects already face delays, curtailment or cancellation owing to prohibitive connection costs or grid strengthening delays – and in some cases it has impaired project viability entirely. Many local stakeholders have reported being offered connection times as late as 2036.

¹ For example, the Great South West's [Green Energy Prospectus](#) highlights the grid as a significant barrier to realising regional potential for low carbon generation.

- 1.2. This is thankfully now an area of significant ongoing national reform – particularly across 2022, 2023 and 2024. Government, Ofgem and industry have each begun setting out significant new policy, regulation, and processes over the last couple of years.
- 1.3. Consequently, this is an opportune point to subject the issue to extended scrutiny, and to examine how we can best mitigate any risks and best exploit emerging opportunities locally. Whilst much of the reform is at the national scale, there is a clear prospect for the council to play a strengthened role in influencing the emerging new energy system for the benefit of Dorset.
- 1.4. This report presents the findings of a Place and Resources Scrutiny Committee inquiry into the impacts, challenges and opportunities of grid constraints and associated reforms. It introduces the key terms, roles, processes, and policies necessary to understand the problems and opportunities, including:
 - (a) The confluence of factors – more decentralised supply, new technologies, major demand growth, and more complex balancing through wider use of flexibility tech – that are prompting the need to reform how the grid is governed, built, and managed.
 - (b) The programme of reform, such as on strategic planning and investment, connection queuing and charging, and electricity and flexibility markets.
 - (c) A set of recommendations for the council resulting from the issues outlined.

2. Background to the review

- 2.1. The Places and Resources Scrutiny Committee determined in May that a task and finish group should be established to review the issue of grid constraints and produce a set of recommendations. The overall objectives were threefold:
 - (a) Growing understanding and awareness of the issues to enable better engagement and advocacy.
 - (b) Gathering further evidence from key stakeholders on the local impacts and possible solutions.
 - (c) Strengthening links with network operators and forming a wider view on how the council could best mitigate the risks and exploit the opportunities for Dorset.

- 2.2. The review was specifically focused on electricity grid constraints. There are of course a much wider set of related energy system issues such as regards the deployment of renewables and storage assets, the deployment of low carbon technologies like EV chargers and heat pumps, electricity suppliers and bills, gas networks, and hydrogen – but full examination of these wider matters was outside of the scope of the review, except where they had relevance to grid constraints specifically.²
- 2.3. The inquiry was structured into five sessions which took place from October 2023 to January 2024, and was timed to coincide with the expected announcement of major national reforms from Government and Ofgem.
- 2.4. The task and finish group was Chaired by Cllr Shane Bartlett, and also comprised Cllr Andy Canning, the late Cllr Tony Ferrari, Cllr Brian Heatley, Cllr Carole Jones, Cllr Robin Legg, Cllr David Tooke, and Cllr Kate Wheller. The group was supported by the Sustainability Team, the Corporate Director for Strategy, Performance and Sustainability, and the Corporate Director for Economic Growth and Infrastructure.
- 2.5. The five sessions comprised:
1. **Session 1:** A background introductory briefing on key terms, roles, and processes.
 2. **Session 2:** Evidence from council officers on the impact of constraints on council programmes.
 3. **Session 3:** Evidence from local stakeholders on the impact of constraints in Dorset beyond the council.
 4. **Session 4:** Evidence from grid stakeholders.
 5. **Session 5:** Review of findings and recommendations
- Those sessions were complemented by desktop research on the reform programme that emerged during the process.
- 2.6. Through the sessions the group heard evidence from a wide range of participants, including council officers from our sustainability, estates, planning and transport teams; Dorset Council’s Cabinet; and externally from Regen and the South West Net Zero Hub; large and small scale renewables developers; retrofitters; EV chargepoint installers; public sector partners; community energy initiatives; high energy-using businesses; economic development representatives; housing developers

² Many of the opportunities noted for closer collaboration with electricity network operators pertain equally to gas networks, and there are considerable and distinct issues pertaining to the future of the gas network’s role (such as in respect of hydrogen) that merit exploration. Many of the reforms and opportunities noted below (such as strategic planning, the new Future System Operator, and new sub-national governance) are ‘cross-vector’ initiatives that regard both electricity and gas.

and housing associations; and network operators. The inquiry is extremely grateful to all the participants for their time and insights.

3. Key findings

- 3.1. As noted above, the fundamental issue is one of constrained capacity and consequent delays and costs for connecting new assets. As well as acting as a drag on projects requiring connections and associated investments, it thereby increases the costs of the energy transition.
- 3.2. Throughout our sessions we heard from a wide range of local stakeholders who identified the contours of these challenges and their impacts – as well as recommending how the council might play a role in resolving them. They told us of many major and minor renewables, EV charger and building retrofit projects they had underway, many of which were running into capacity issues. Some of the key themes noted by stakeholders included:

Issues:

- Extreme delays to 2036 for connection times owing to transmission-level constraints.
- A very lengthy queue for connections, and its congestion with often speculative and unviable projects.
- More strategic projects often being stuck behind less strategic projects in the queue, owing to non-discrimination requirements in the process.
- Delays arising from non-infrastructure factors like wayleaves.
- Customer service issues for connecting customers, such as long waits for quotes or the inefficiency of having to manage non-standardised processes that vary across different network operators.
- Barriers to connecting due to inadequacies how the anticipated impacts of new connections are modelled overestimating risk, particularly for battery storage, and solar PV outside of summer peak periods.
- Requests for significant deposits (e.g. £200k) even for projects that have been given 10-12yr connection dates.
- Lack of upfront clarity about network infrastructure's precise location of condition, with the risk that further significant challenges can emerge once detailed feasibility work for individual connections is undertaken.
- Limited awareness by connecting customers on the extent of competitive demand for individual connections, and thereby of the likelihood of attaining one without incurring significant costs – to inform earlier customer decision-making about siting and the worthiness of sinking resource into an application.

Impacts:

- Reinforcement costs and delays threatening the timeliness or viability of projects – including risks to renewable deployment, business expansion and development.^{3,4}
- Significant project cost uncertainties owing to connection costs tending to increase substantially if requested (sometimes by tens or hundreds of thousands).
- Delayed or deterred investment, particularly in renewable generation.⁵
- Constraints to business growth potential or to the siting and relocation of high-energy using industries.
- Impediments to plant electrification to decarbonise high-energy industry.
- Limits on export rates for renewable generation impairing their income generation potential.
- Systemic incentives to install smaller capacity assets (under ‘connect and notify’ rules) in order to avoid the risk of connection delays.
- Missed opportunities to install heat pumps when boilers need replacing due to the risk of connection delays (during which period the building would lack heating or hot water), with the result that new gas boilers are instead locked in for the duration of their lifetime.
- Knock-on strategic economic risks, such as for investment in renewables, or to the tourism economy through impediments to EV charger provision or shore power/cruise electrification.
- Risks of exacerbating rural/urban disparities.

Solutions:

- Better evidencing the local need for network investment.
- Forging stronger strategic and collaborative relationships with network operators.
- Supporting better strategic planning of the network at a regional and local scale, to better fit local knowledge and ambition on net zero, development and economic growth.
- Lobbying on key constraints (e.g. Mannington GSP) to aim to expedite upgrades.

³ And, relatedly, the holistic consideration of grid constraints within government’s conception of sustainable development and determination of housebuilding targets.

⁴ One participant noted a precedent of one local authority undertaking strategic investment in the grid themselves directly, to mitigate prohibitive costs impairing development in a locality.

⁵ One participant told us that they have 10 projects totalling 30MW and £20m+ of investment stalled.

- Enabling wider use of constraint mitigation measures, including flexibility measures and energy storage, microgrids⁶, alternative low carbon heat sources like geothermal, energy efficiency measures, and renewable colocation.
- Working cross-boundary and at a regional scale to make the case for investment.
- Better embedding the issue within local policy framework and decision-making, particularly planning.
- Exploring the opportunities for innovation projects and of Ofgem innovation funding.

3.3. Further discussion and analysis found that much of the underlying cause of these issues lies in the following:

- A lack of strategic anticipatory investment – Until recently, grid development has only occurred piecemeal and reactively in response to demand (rather than in anticipation of it), and there has been a lack of strategic planning and coordination of energy generation infrastructure deployment with grid upgrades. This owed to the traditional regulatory framework lacking mechanisms to facilitate strategic investment ahead of need.
- A lack of strategic network planning – The lack of a mechanism for anticipatory investment in part owed to the lack of strategic network planning which could inform decisions on what to build, where and when. Long-term network planning will be crucial to alleviate constraints and inform consenting and investment decisions that will support the deployment of grid infrastructure, renewable generation and electricity storage assets.
- Inadequate connection queue processes – The queue for connecting to the grid nationally has grown considerably over recent years to almost 400GW worth projects. Connection date offers are 5yrs later than the requested date on average, whilst 40% of projects are offered dates of 2030 or beyond (with some as late as 2036 or 2037). This impairs the allocation of capacity and decision-making on network upgrades, it can drive up costs, and it disincentivises investment in new generation or storage infrastructure.
- Poor coordination and sub-national governance – Some delays and inefficiencies derive from inconsistency in planning and delivery across institutions and across vectors (gas and electric), resulting in further inefficiencies and delays. This means that there's a patchwork of plans

⁶ The inquiry heard from the example of the Hazelmead development in Bridport – a site of 54 houses in a grid constrained area with a microgrid. Funded by Low Carbon Dorset and Bristol Energy Cooperative, the project uses a private wire network including a 1.6MW community battery that mitigates the need for grid reinforcement by limiting peak demand from the development.

which make inconsistent forecasts, as well as little accountability and inconsistent engagement with local authorities.

- Poor infrastructure build times – Grid infrastructure development which qualifies as ‘Nationally Significant Infrastructure Projects’ (NSIP) has been subject to consenting delays that have played a role in delaying infrastructure build times – and thereby aggravated the wait times for consents dependent upon them. These challenges have been highlighted by both the National Infrastructure Commission and government’s Electricity Networks Commissioner.
- Nascent flexibility markets – Upgrading grid infrastructure is only one half of the job of efficiently managing grid capacity. Just as important is enabling flexibility services like energy storage and demand side response measures where consumers are incentivised to shift their demand to other times. Smart and flexible systems will cut the need for new grid infrastructure, particularly regional flexibility markets, and enable more efficient use of available capacity. But these markets are still currently very immature.

3.4. The above challenges are very much recognised by Government, Ofgem and industry – and they have therefore prompted a programme of significant but complex policy and regulatory reform, much of which was released during the course of the review. This reform is therefore very recent and still emerging. It is thereby still being implemented and embedded, but there appears to be clear enthusiasm from Government, the regulator and network operators alike to resolve the systems challenges through these actions. They do present clear opportunities for Dorset.

4. Implications and recommendations

- 4.1. Dorset Council will continue to play a central role in the delivery of net zero locally – including through the leadership, policy frameworks, planning and investment required to support the deployment of low carbon technologies.
- 4.2. Alongside our role as a Local Planning Authority and Local Transport Authority, this means that we have a critical strategic interest in the future evolution of the energy system. Yet, unlike with transport and development – systems which are critically dependent upon the energy system – we currently play a much more peripheral role in strategically planning the local energy system.

- 4.3. Energy infrastructure needs to be seen through the same lens as other strategic infrastructure, with investment better aligned to local knowledge, ambition and decision-making. Our ambitions for net zero, development and economic growth will therefore require us to play a much more central role in local energy planning in the future – and strengthening our collaboration with energy networks will be essential for this. In so doing, we will be able to both better facilitate network investment aligned to our strategic ambitions; and maintain more efficient and collaborative operational relationships with network operators to smooth delivery.
- 4.4. There is clear intent from network operators to further strengthen relationships with local authorities so that we can better collaborate, innovate, and develop capacity and capability. Our relationships will no doubt evolve as we reflect on our ways of working and develop new forms of good practice. Our trialling of SSEN’s LENZA tool⁷ is a strong demonstrator of the willingness and opportunity for closer collaboration.
- 4.5. It is essential that we strengthen our relationships with network operators. Whilst we already provide some data to inform their forecasting, and whilst there are good operational links with projects like our public EV charger programme – there is also much opportunity to strengthen our links in other areas. In particular, we must establish better two-way flows of information with network operators through regular, iterative, long-term engagement. Stronger, ongoing relationships are needed in each of the following respects:
- Strategic: Co-developing policy or strategies in well-established areas (e.g. planning, transport, housing, economic growth, net zero); strengthening our input into their forecasting work; developing new strategic local or regional energy plans; providing regular opportunity for strategic conversations about barriers or opportunities; and collaborating to co-develop innovation projects to unlock innovation funding through Ofgem’s Strategic Innovation Fund and UKRI.
 - Operational: The planning and delivery of low carbon technology deployment projects (e.g. EV chargers, building retrofit) and development – including on barriers to approvals or consents; and strengthening support for vulnerable residents (e.g. on access to flexibility opportunities etc.).

⁷ [SSEN Distribution trains first councils to use new LENZA planning tool - SSEN](#)

This review therefore makes the following recommendations:

- 1. Establish regular quarterly strategic meetings with network operators**, to address strategic challenges and identify areas for collaboration or innovation. This should clarify single points of contact to coordinate meetings, facilitate data sharing, seeking or provide feedback on our respective plans, and identifying joint skills or comms opportunities. This may include brokering or facilitating strategic meetings between network operators and key local stakeholder groups like developers.
- 2. Seize the opportunity of Regional Energy System Planners** by proactively engaging now to influence their design and implementation, and by reflecting on how we can most effectively give voice to local stakeholders. Also seek clarity from Ofgem on our potential participation in the SW (Peninsula) RESP.
- 3. Strengthen the evidence on local investment need** to support our network operators' case for investment, by continuing to pursue a cost-effective route to Local Area Energy Planning – building on the strong opportunities of the LENZA trial and co-developing a dynamic plan that is useful for network operators.
- 4. Ensure that grid constraints and constraint mitigation measures are embedded in our strategies, policy and decision-making**, by better utilising emerging data and tools to inform our strategies/plans, decision-making, and delivery programme design – in particular, to engage network operators on our emerging plans and using the LENZA tool to inform discussions.⁸ This should also consider any wider but linked socio-economic risks or opportunities, such as from flexibility markets.
- 5. Explore the opportunities of Ofgem's Strategic Innovation Fund⁹ and our devolution asks** to actively develop, trial and deliver new processes, tools and approaches with network operators – particularly for flexibility.
- 6. Lobby our MPs, government, Ofgem and network operators** on key grid issues such as expediting critical transmission infrastructure upgrades, queue prioritisation, and customer service improvements.

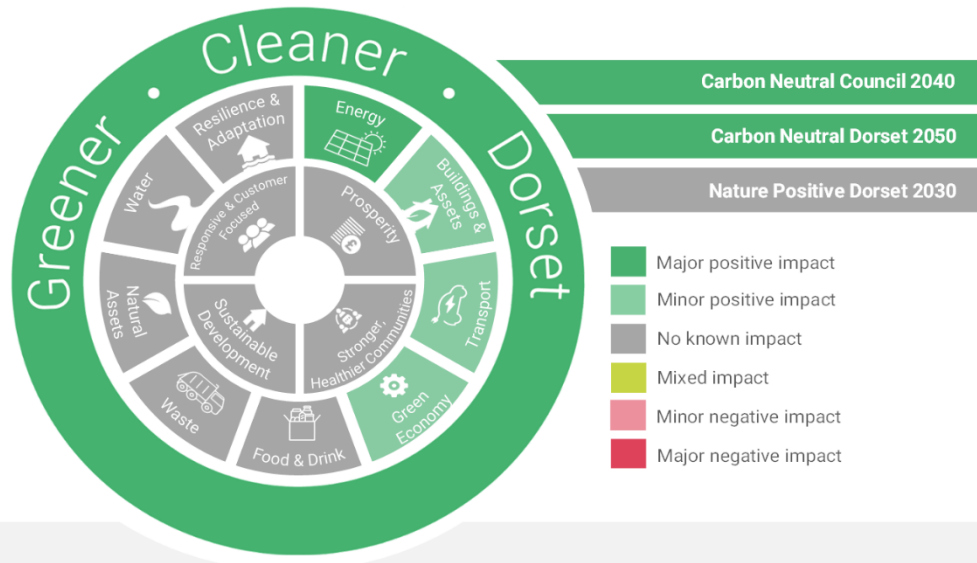
⁸ Network operators are making available key datasets, analysis and tools on things like capacity and constraints, technology uptake forecasts, and customer vulnerability. There is a strong opportunity to better embed the insight within these into our plans and operations, including through wider use and application of: Emerging tools like [SSE's Local Energy Net Zero Accelerator \(LENZA\)](#) and [UKPN's Your Local Net Zero Hub](#); datasets available through [SSEN's Data Portal](#) and [NGED's Connected Data Portal](#), as well as the [ESO's data portal](#); and Mapping, including [SSEN's network maps](#), and [NGED's network maps](#).

⁹ <https://www.ofgem.gov.uk/energy-policy-and-regulation/policy-and-regulatory-programmes/network-price-controls-2021-2028-riio-2/network-price-controls-2021-2028-riio-2-riio-2-network-innovation-funding/strategic-innovation-fund-sif>

5. Financial Implications

5.1. This report in itself has no financial implications, as it constitutes a set of recommendations to Cabinet. If agreed upon and actioned, there would be resource implications. Recommendations 1, 2, 4, 5 & 6 constitute actions which would require officer time, though it is believed that these could be facilitated through existing roles – particularly a forthcoming energy policy role due to be appointed to the Sustainability Team. Recommendation 3 would potentially be more costly as it would involve the creation of a new strategy. The costs to undertake this are being scoped, with some existing examples having cost c.£100,000. Accordingly, as the recommendation states, a cost-effective approach is recommended that builds upon the existing availability of a digital geospatial mapping tool paired with collaborative approaches to engagement. As the report notes, it is recommended that the costs of such would be justifiable given the potential cost savings and strategic significance of the challenge – and its direct link to evidencing the case to secure local investment.

6. Environmental Implications



Carbon Neutral Council 2040

Carbon Neutral Dorset 2050

Nature Positive Dorset 2030

Quantitative Impact on CEE targets (if known)

	Unit	Number of units (+/-)
2030 - Natural asset extent & condition	Ha	0
2040 - Operational Emissions	CO ₂ (tonnes)	0
2050 - County Emissions	CO ₂ (tonnes)	0

Summary of Impacts

As this report notes, grid constraints are currently a major barrier to decarbonisation – and, therefore, strengthening the system of strategic planning, investment and governance for the grid is critical for achieving net zero. Implementing these recommendations is therefore a fundamental and direct enabler for local efforts to decarbonise power, and thereby (indirectly) the decarbonisation (through electrification) of buildings and transport. Moreover, it thereby has potential to spur the green economic opportunities associated with the deployment of energy infrastructure and the electrification of transport and heating. The contents of this report and its recommendations thereby directly support the council’s Natural Environment, Climate and Ecology Strategy ambitions for a Carbon Neutral Council by 2040 and a Carbon Neutral County by 2050 – notably Mission 1, Objective 4 (Influence strategic energy planning for a locally efficient and responsive grid).

Recommendations	Responses
Energy	Unlocking grid capacity will have a positive impact on energy infrastructure, by helping to unlock capacity to support the cleaner forms of generation.
No recommendations found for this category	
Buildings & Assets	Unlocking grid capacity will support the decarbonisation of buildings, particularly for onsite generation and heat electrification.
No recommendations found for this category	
Transport	Unlocking grid capacity will support the decarbonisation of transport through enabling provision for EV chargers.
No recommendations found for this category	
Green Economy	Unlocking grid capacity will have a positive impact upon the provision of green investment, jobs and skills within the energy sector most directly, and within building retrofit and transport electrification sectors indirectly.
No recommendations found for this category	
Food & Drink	n/a
No recommendations found for this category	
Waste	n/a
No recommendations found for this category	
Natural Assets & Ecology	n/a
No recommendations found for this category	
Water	n/a
No recommendations found for this category	
Resilience & Adaptation	This report did not evaluate resilience in its scope, however strengthened relationships with network stakeholders would also enable means for strategic discussion on network resilience and adaptation measures.
No recommendations found for this category	

7. **Well-being and Health Implications**

- 7.1. There are no specific health and wellbeing implications of this report. Indirectly, grid decarbonisation would have health and wellbeing benefits issuing from transport and heat electrification, requisite building energy efficiency improvements, and action to avert climate change.

8. **Other Implications**

- 8.1. There are no other specific implications contained in this report.

9. **Risk Assessment**

- 9.1. **HAVING CONSIDERED:** the risks associated with this decision; the level of risk has been identified as:

Current Risk: High

Residual Risk: Medium

Failing to ensure sufficient grid capacity would present a significant barrier to the council's net zero ambitions for itself and Dorset. As noted in the report, it is also likely that it would act as an increasingly significant drag on investment, business expansion, economic growth and development.

10. **Equalities Impact Assessment**

An initial scoping exercise is currently being undertaken to highlight any specific impacts that need to be considered regarding the grid.

11. **Appendices**

Appendix 1 – Grid Capacity Review – A final report of the Place & Resources Scrutiny Committee Task & Finish Group inquiry, Jan 2024

12. **Background Papers**

[Place and Resources Scrutiny Committee Work Programme – Appendix: Grid Capacity review summary](#) (25 May 2023, Agenda Item 7)