Written evidence submitted by Octopus Energy

Octopus Energy welcomes the opportunity to respond to this Call for Evidence examining the challenges and opportunities arising from the increasing use of electricity to power the economy of Net Zero Britain.

Octopus Energy Group is a global energy tech pioneer, launched in 2016 to use technology to unlock a customer-focused and affordable green energy revolution. Our domestic energy arm is a retail energy supplier providing cheaper, greener energy to 5m households and 60,000 small businesses across GB. Octopus Energy Services is bringing heat pumps and other smart products to thousands of homes. This is in part made possible by Octopus's tech arm, Kraken Technologies, which offers a proprietary, in-house platform based on advanced data and machine learning capabilities to automate the energy supply chain and allow outstanding service and efficiency.

Octopus Energy is a part of Octopus Energy Group. We operate 10 businesses in 8 countries across 4 continents, proving our Group's mission is going global. Octopus Energy has raised over £1 billion in equity finance, backed by investors such as Al Gore's Generation Investment Management, Canada Pension Plan and Tokyo Gas, and Octopus Energy Generation is one of Europe's largest investors in renewable energy, managing a £6bn portfolio of renewable energy assets across Europe. We are investing heavily in heat pumps, home solar installation and the provision of Electric Vehicle services and network charging infrastructure. We've also recently launched Octopus Zero, a tariff which guarantees no energy bills for five years for new homes kitted out with the right combination of solar panels, home battery and heat pump.

Octopus Energy is investing heavily in solutions which are enabling the decarbonisation of power, transport and heat and therefore we are well-positioned to share our experience of the current challenges, and future opportunities, that the increasing use of electricity to power the GB economy are, or will have.

Our key points are:

- Insufficient grid capacity currently poses a significant challenge preventing more low-carbon generation from connecting to the system and generating power. Connection reform has not moved fast enough and will likely not be sufficient to reduce this bottleneck on its own. Major queue reform is needed along with the rapid introduction of competition in network build to reduce bottlenecks.
- The largest gap in terms of storage requirements is the lack of long-duration storage on our system at present or in the pipeline. Stronger financial incentives are needed to encourage investment - most likely through subsidy support at this stage.
- If we don't intelligently manage electric vehicles and heat pumps, National Grid ESO predicts EV charging and heating demand will result in a need for an additional 22GW of peak power by 2040, which will place further pressure on the grid and require even more generation capacity.
- To ensure this new demand can be managed smartly, there are a number of short-term enablers needed:
    - The installation of smart meters and mandatory half-hourly settlement
    - A well-functioning and performing Data Communications Company (DCC) and associated communication infrastructure
    - Proportionate and agile consumer protection and standards for smart technology.
- In the longer term, market reform is needed so that wholesale prices include locational signals, better reflecting local generation and encouraging distributed assets and residential flexibility to shift in response to accurate price signals, reducing overall costs of the transition.
- Given the increasingly distributed nature of the future electricity system, system operation needs to be digitised and automated as much as possible - both at national and local levels.
- Many core existing organisations (Ofgem, ENA) are currently resource strained delaying crucial reform and change processes which are necessary to meet our decarbonisation targets.

- We are concerned by the growing scope of responsibilities being placed on the FSO - an organisation which does not yet exist and which possesses limited digital capabilities. We must avoid placing too much on this organisation during the transition period from ESO to FSO.
- Finally, current planning frameworks put too much weight on the opinions of individuals vs the collective. We have over 20,000 communities that have registered their interest in having a local wind turbine - proving increasing public support. Communities must be brought along in the planning process, but critical low-carbon projects should no longer be stalled as easily as the current process allows - given the urgency of the decarbonisation challenge.

The National Grid and the Government's energy targets

1. **What challenges does connecting more renewable electricity to the grid pose, both for those businesses and households who wish to connect to it, and for grid operators?**

For grid operators, connecting more renewable electricity to the grid poses challenges in terms of system operation eg. with an increasing proportion of uncontrollable generation on the system, the role of balancing supply and demand becomes more complex - which results in higher cost actions being taken by the system operator. Equally, as the decarbonisation of heat and transport is resulting in increases in demand, this is resulting in an increased occurrence of thermal network constraints as network infrastructure can't always keep pace with these pressures. However, given many Low Carbon Technologies (LCTs) can be flexible in their operation, this also provides an opportunity to use this inbuilt flexibility to flatten energy demand and shift load outside of periods where thermal constraints are likely. Finally, most renewable electricity sources do not provide the same level of stability as synchronous generators meaning system operators are needing to procure additional stability services to ensure the system remains stable - which comes at an additional cost.

For households and businesses, connecting more renewable electricity to the grid can result in delays in connection times for the connection of LCTs like Electric Vehicles, Heat Pumps and Battery Storage due to lagging grid infrastructure and increases in grid congestion. Network companies themselves can also hold up connection times due to outdated processes which aren't yet able or haven't been updated, to handle the much higher volumes of connection applications. Given the increases in grid capacity needed, this comes at a cost to households and businesses who ultimately fund the build of network infrastructure through network charges. Finally, system costs are forecast to increase as more renewable electricity connects to the grid and this is socialised across all end users.

2. **To what extent do the following act as barriers to the UK's targets to decarbonise the power supply? How well is the Government addressing these barriers, and what else can be done to address them? What, if any, targets should be set in these areas?**
    - **grid connection delays and bottlenecks, onshore and offshore;**
    - **lack of, or delays to developing necessary infrastructure;**
    - **insufficient scale or capacity;**
    - **supply chain and skills constraints, and**
    - **access to finance**

Despite the urgency to connect more renewables, projects are being given connections time of 5 to 10+ years when applying to connect to the grid - and many onshore projects are capable of being built in a year, meaning the contributions that such technologies can make to decarbonisation is being held back multiple years. Therefore, **grid connection delays are a significant barrier to the UK meeting its decarbonisation targets** - and undoubtedly to the UK meeting its target to decarbonise the electricity grid by 2035. The current approach to awarding grid connections is outdated - you simply join a long queue and there is no prioritisation for projects with land, funding and planning consent secured, nor an expiration date on grid connection offers. This means many developers sit on connections, without actively developing projects which could contribute to

decarbonising the UK's electricity grid. Ofgem has recently set out its intentions to reform the electricity connections process with the objective of seeing electricity connection offers with shorter average connection dates.. enabling a timely transition to net zero. We welcome this announcement and particularly the commitments to promote mature projects closer to delivery above those that could be 'blocking' the queue, as well as foundational improvements to pre-application data such as network heat maps. However, current processes in place to reduce the time it takes to connect to the network will likely not be sufficient to solve the problem and have moved far too slowly. Therefore we urge Ofgem, ESO and Government to look at more revolutionary approaches to reform the connection queue. We suggest prioritisation is reformed to be based on a number of criteria such as project readiness, carbon content and alignment with decarbonisation targets, community support and grid availability. This way we will ensure that the projects that can be built most quickly and which align best with GB decarbonisation targets are prioritised.

In addition to connection queue issues, progress on allowing competition in the build of network infrastructure has progressed far too slowly largely due to contestability from the incumbent owner of network infrastructure, National Grid. Ofgem and Government should have moved much faster to allow new entrants to participate and help to relieve some of these network bottlenecks. The lack of progress here is partly to blame for the delays and bottlenecks currently being experienced.

3. **How resilient is the National Grid? How does it need to adapt to achieve the Government's targets of (a) decarbonising the UK power system by 2035 and (b) becoming a net zero economy by 2050? What changes are needed to promote resilience through diversity of supply?**

Optimisation of the electricity system needs to be digitised both at the national level and local levels. We are moving away from a system made up of a few large generators with one-way directional flows, to a system which is made up of hundreds of thousands of assets connected at the transmission and distribution level and with multidirectional flows. Therefore, keeping the system in balance is becoming an increasingly difficult optimisation challenge and one that can no longer be resolved by manual control room decisions. Digitisation of the national control room, as well as distribution system operation, is needed to find the most cost-effective optimisation solutions. However, moving to an increasingly automated system comes with a greater risk of cyber attack. Therefore, increased focus is needed on cyber security for critical grid infrastructure.

The impact of the CfD on supply-side diversity should be scrutinized. Increasingly pots within the CfD are being merged so that different technologies compete side by side. Whilst this is positive from a consumer perspective in terms of funding the least expensive projects, this could have adverse impacts on system resilience if only certain types of generation sources are being awarded contracts. On top of diversity in types of generation, diversity in the location of resources is also important for resilience, both to protect the system from the scale of impact from weather events and localised network failures. Given the CfD awards projects from lowest to highest cost, resource availability is a key investment driver which naturally drives developers to develop projects in similar locations - where it is windiest, or where there is grid capacity. Geographically diverse generation brings considerable benefits, as was highlighted in Regen's Go West report where it was demonstrated that locating more offshore wind on the West coast would reduce the number of events of troughs and peaks in generation and almost halves the maximum event duration of very low fleet power.

Therefore, **government investment schemes (eg. the CfD and CM) should be reviewed to ensure that diversity in terms of generation source, location and size of assets is encouraged** rather than unintentionally disincentivised through the design of these mechanisms. Additionally, expansion of the grid will allow new potential connections more optionality in where they locate - which will also promote resilience through diversity of supply.

4. **What contribution do, or should, localised mini-grids make to achieving the Government's targets of (a) decarbonising the UK power system by 2035 and (b) becoming a net zero economy by 2050? What role ought there to be for decentralised energy distribution points and distributed energy generation in the future electricity supply?**

Increasing levels of distributed generation is a feature of the decarbonised electricity system. DNOs need to get better at managing the implications for the safe and resilient operation of their networks. Other distributed connected assets (such as battery storage, electric vehicles etc) will also proliferate. The challenge of optimising the grid will become increasingly local, with multi-direction flows, and we are concerned that a single GB wholesale price is becoming an obstacle to getting the thousands of assets to make rational choices based on local supply and demand conditions. Getting distributed assets to respond to market signals and support the system to the same degree as large, transmission-connected assets is essential to keep future system costs low.

5. **What role will, or should, artificial intelligence play in decarbonising the UK's power supply?**

Artificial intelligence (AI) should be welcomed by the energy industry if it is can be used properly for the benefit of society and consumers. Decarbonising the power system and reaching Net Zero are transformational changes, and therefore transformational action and technology will be essential to guarantee the realisation of these targets. AI is likely to be able to improve a number of system functions that are currently known. A couple of examples include improving system operation by more accurate forecasting of generation and demand, and improved optimisation of flexible assets. However, given the pace of innovation in this space, many of the roles or possibilities are likely not yet known. Therefore, innovation in AI and its evolving capabilities should be welcomed and encouraged providing strong security measures are embedded.

6. **To what extent will the measures in the British Energy Security Strategy and the Powering Up Britain plan deliver the Government's high-level targets of (i) decarbonising the UK power system by 2035 and (ii) becoming a net zero economy by 2050?**

The measures in the British Energy Security Strategy and Powering Up Britain plan helpfully set out some measures which will set GB on the right trajectory to reaching these targets, however, there is no clear vision or comprehensive strategy for how the 2035 decarbonised power sector target will actually be achieved. Whilst the plans clearly indicate targets for new clean generation, they are light touch on the complementary technologies that are needed to integrate renewables at the lowest cost and ensure system reliability and resilience. Low carbon flexibility across a range of timescales will be needed to ensure the system is balanced in the short and long term. This covers demand management, low-carbon dispatchable generation, storage and interconnection. **Detail on what is needed to support investment in low carbon flexible technologies in terms of revenue support, market arrangements and other enablers is completely absent from either the British Energy Security Strategy or Powering Up Britain** - and without assessing the scale of low carbon flexibility that's required and tracking progress in relation to renewable generation targets this puts both the 2035 and 2050 targets at considerable risk.

7. **How will the design of the future grid incorporate adaptation measures so as to minimise the potential impacts on the electricity system for extreme weather events, such as Storn Arwen in November 2021?**

Octopus Energy will not comment on this question.

<u>Storage and flexibility</u>

1. **What developments, including technological developments, and incentives are required in the areas of:**
    - **Storage;**
    - **Transmission and distribution;**
    - **Demand management and flexibility, and**
    - **Interconnection with neighbouring grids?**

Storage

In our view, **the largest gap in terms of storage requirements is the lack of long-duration storage on our system at present or in the pipeline**. As we continue to invest in renewable generation, there will be more variability in residual demand across multiple timeframes. Whilst we've seen investment in short-duration storage technologies in recent years, investment in long-duration storage has not kept pace.

Large-scale long-duration electricity storage (LLES) is able to bridge production gaps, which will occur more frequently as the system relies more on renewable generation, meaning it provides energy security, enables more renewables to connect and reduces total system costs. Long-duration storage solutions could reduce net zero system costs by between £13bn and £24bn over the modelled period of 2030 to 2050.[1] LLES can reduce curtailment, absorbing renewable overproduction for multiple days, able to export power back to the grid when needed. The challenge at present is that most LLES technologies are still nascent and not yet profitable because these technologies are capital intensive, have long lead times from investment to commissioning and there are very few long-term revenue streams (and if so low value) on which to base investment decisions. Whilst DESNZ has taken tentative steps by including demonstrator funding and running a consultation on an appropriate support scheme, the rate of change is not fast enough given the pace of investment in renewable energy and therefore the increasing likelihood of multi-day renewable output occurrences. In order to encourage investment in LLES and to drive cost reductions, **stronger financial incentives are needed to encourage investment - most likely through subsidy support at this stage.** In the Energy Security Plan, Government committed to putting in place an appropriate framework by 2024 to enable investment in large-scale long-duration electricity storage. Therefore, it is essential that these timelines do not slip and that the Government quickly narrows down the options for revenue support to ensure commercial-scale projects can be operational by 2024.

Transmission and distribution

Beyond issues already mentioned regarding the time it takes to connect to the grid, information about available capacity is currently poor. We must make the grid smarter, more digitised, and fit for a dynamic renewable system. **A live database could make connecting to the grid less opaque and more transparent.** Through Octopus' Winder platform, we've mapped out current substation capacity, piecing together the picture using regional DNO data. Yet in other countries this information is much easier to come by, for example in Spain, the Distribution Systems Operator (DSO) is obliged to share information about available capacity on a monthly basis. This doesn't mean development will be guided only by where there's capacity. But if we're trying to accelerate building more green energy, this approach provides a helpful tool to show where it's popular, and if there is capacity, we should be able to move really quickly. And every time a developer makes an application, they start from scratch to carry out a wide range of surveys - so we can do more with data here too.

The vast majority of new demand, such as EVs and heat pumps, will be connected to the low-voltage distribution network. However, at present, most distribution networks have very limited visibility of their networks at this voltage level. **Therefore, reaching full coverage of the whole network is needed** to allow DNOs to run the network at higher utilisation, defer the need for investment as much as possible and improve forecasting and accuracy of procurement measures to relieve local constraints.

Demand management and flexibility

The opportunity to harness the ability of consumers to shift when they consume electricity in order to support a decarbonising system is growing and expected to escalate, particularly as more customers adopt electric heating, invest in solar and storage and switch to electric vehicles. There are a number of baseline enablers, which are generally underway, but essential to upscale the level of benefits and participation of residential flexibility in electricity markets.

[1] DESNZ, Benefits of long-duration electricity storage, August 2022, https://www.gov.uk/government/publications/benefits-of-long-duration-electricity-storage

These include:

- **The installation of smart meters and mandatory half- hourly settlement** - which allow more cost-reflective settlement of consumption - and allow consumers to benefit from shifting load outside of peak periods and avoid costs for doing so
- **A well-functioning and performing Data Communications Company (DCC)** - which is necessary to enable time-of-use tariffs and other retail innovations which encourage load management to flourish
- **Proportionate and agile consumer protection and standards** - to engender trust and create a level playing field

At the moment there is little incentive for suppliers to invest in smart products and learn about how customers respond to different stimuli. The important point here is that harnessing consumer flex will not happen automatically with the rollout of technologies like EVs and heat pumps. To unlock consumer flex, suppliers need to spend scarce capital and expertise to develop new technology to control assets, create apps and new forms of customer communication, introduce new tariffs and invest in trialling and evolving how products are structured on the basis of experience. On top of the fundamental technology enablers, cost-reflective market signals are needed to incentivise load to shift in accordance with local system needs - and this will require more strategic reform that needs legislative change. The root of the problem lies in the single GB wholesale market. Setting one half-hourly price for electricity across the whole country cannot, with any accuracy, signal when and where flexibility is needed, nor reward flexibility according to its value to the system. For example, a high GB-wide wholesale price indicates that we should all try to turn down our usage at that time. But there may still be parts of the country where there is a surplus of wind energy behind a transmission constraint and where the system would benefit from customers using or storing power to make the most of those clean electrons.

With this in mind, the current single GB wholesale market provides weak incentives to shift demand, and can often incentivise demand shifting which exacerbates, rather than relieves, local energy constraints. **Wholesale prices that better reflect local generation patterns would encourage a more effective response from flexible assets, and invite retailers and others to innovate in ways that are more beneficial for the grid and GB**.

If the Government's Review of Electricity Market Arrangements (REMA) is to be successful it must, above all else, address this failure. New market arrangements need to provide stronger locational signals which facilitate flexibility to help balance an ever-greener grid and provide an affordable way out of fossil fuel dependency.

Interconnection with neighbouring grids

Interconnection with neighbouring grids is another key resource able to improve the resilience of GB's electricity system. There are greater synergies when interconnection is possible with countries with fairly different generation make-ups compared with GB, or production peaks which occur at different times, as this diversity will help improve GB system resilience. Octopus Energy has invested in Xlinks, the company building the world's largest subsea cable to deliver renewable energy from Morocco to GB. This project will export solar power from Morocco to GB for an average of 20 hours a day. Therefore, Government must ensure frameworks continue to encourage investment in interconnectors, however equally it is important that we work towards creating a level playing field between all providers of flexibility both from a market access angle through to exposure to network charges, and this should be a primary objective for Government.

2. **How will the expected growth of demand for electricity to power low-carbon technologies such as electric vehicles and heat pumps affect how supply and demand is balanced across the electricity system?**

If we don't intelligently manage electric vehicles and heat pumps, National Grid ESO predicts EV charging and heating demand will result in a need for an additional 22GW of peak power by 2040. To meet this additional demand at peak, additional generation capacity will be needed, along with supporting network infrastructure

which will come at a significant cost. However, it is now well proven that these technologies have significant flexibility in their operation meaning they can be highly responsive to price signals and flatten the demand curve by charging outside peak. Therefore, **the increases in demand expected due to these technologies have the potential to cause significant problems on the network, but these problems can largely be avoided through intelligent management of this demand**. However, in order for this intelligent management to come forward at scale the cost incentives must be there to encourage demand to shift and for suppliers to offer time-of-use-based pricing to their customers. At present, price signals do not accurately reflect the cost of consumption at any given time or location, therefore the incentives to offer consumer products and tariffs that incentivise this intelligent management of new demand remains limited. **Wholesale market reform is needed to address this barrier, particularly the introduction of Locational Marginal Pricing (LMP) to improve cost reflectivity so that demand can be optimised to support local system needs** and truly step up to play its part in enabling this local matching of supply and demand.

Governance and institutional arrangements

1. **Are the current governance arrangements for the grid fit for purpose? To what extent do the proposals in the Energy Bill address any issues in governance?**

We fully support the introduction of an Independent System Operator to impartially manage the network and ensure the best outcomes for consumers. This is an essential change in governance arrangements to enable net zero and the sooner this new body is created the better. Progress on defining the exact roles and responsibilities of this organisation has been slow to date. We welcome the recent Strategy and Policy Statement which has been published, which has started to set out more detail on the roles and responsibilities expected of Government, Ofgem and the Future System Operator (FSO) in meeting their statutory duties. However, we urge Government to take a stronger steer here and to move quickly to define more detailed objectives and success criteria to measure the performance of the FSO.

We also support the reform of code governance due to be introduced under the Energy Bill. The CMA found in its review published in 2016 that current governance arrangements allow vested interests to slow down the pace of change and thwart these strategic and important objectives.[2] Therefore, these reforms will enable Ofgem to fulfil its new strategic role and license new code managers. These changes are essential to ensure code governance no longer limits innovation and is able to keep pace with new and evolving policy objectives.

In terms of governance arrangements at the distribution level (which do not form part of the Energy Bill), we agree with Ofgem's recent assessment that further clarity is needed over the long-term roles of market facilitation and network planning. The Independent System Operator seems like a suitable party to take on the market facilitation role in the long term, given its experience in this area at the national level, and given the increasing amount of coordination that will be needed between local and national services and markets in the future. That being said, we are concerned by the scope of responsibilities falling on an organisation which does not yet exist. Therefore, it is worth considering what alternative parties may be suitable to take on this role.

2. **Does the current Electricity System Operator - or will the proposed Future System Operator - have sufficient powers? If not, what further powers will they need?**

The full definition of the core roles, responsibilities and statutory duties of the FSO has not yet been finalised which makes it difficult to yet assess whether it will have sufficient powers to carry out its functions. **More clarity is needed on how the FSO will be held accountable to achieve its statutory duties**, to ensure that this body truly acts independently with consumer impacts at the heart of all decision-making. Whilst we fully support the intent for the FSO to build up the capability to take a whole system view of network planning, design and markets across multiple energy vectors, it is not yet clear what powers the FSO will have to make these strategic decisions and enforce action, or the methods by which these decisions can be challenged by

[2] Competition and Markets Authority (CMA), Energy market investigation, final report, 2016

industry if not deemed to meet its statutory duty to have regard to whole system impacts. Equally important is the expectation that the FSO must be looking to drive competition, coordinated, and effective markets which are open to all flexibility technologies of all sizes. The Electricity System Operator (ESO) continues to use bilateral arrangements and create markets which are only accessible to certain technologies, which does not align with this new objective. Therefore, methods by which to hold the FSO to account for these new objectives will be essential so as to avoid creating the same problems with this new body that currently exists with the ESO.

3. **Is there enough resource available - across the Electricity System Operator, regulatory bodies, Government, and network companies - to deliver policy, regulatory and industry workstreams at the pace necessary to achieve Government targets? If no, what additional resource is required?**

We have particular concerns about a few of these organisations.

The first is Ofgem, the regulator. The high turnover and poor corporate memory have resulted in Significant Code Reviews and other change processes being drawn out far longer than the pace needed to achieve Government targets. Many important and strategic reforms have had to be deprioritised, often being delayed a number of years, due to the need to refocus the workforce on short-term priorities. Whilst we understand the need for this refocus, particularly during a time of rising bills and consumer protection concerns, this came at the detriment of longer-term consumer benefits, and there was no clear comparison of trade-offs when this decision was taken by Ofgem. Therefore, we are concerned that the high turnover and frequent recruitment cycles are preventing Ofgem from progressing on the longer-term strategic work which is crucial to achieving GB's 2035 and 2050 decarbonisation targets.

Whilst the recent RIIO-ED2 process has successfully put in place new stretching targets for the DNOs in terms of tendering for and using flexibility as an alternative to traditional network build solutions, **Ofgem must ensure they effectively use the DSO Incentive to hold DNOs to account** and to encourage DNOs to coordinate and standardise products and processes - where work is being driven by the ENA's Open Network project.

Ofgem has rightfully begun to review governance arrangements at a more local level, and whilst we agree that the FSO may be the right long-term owner of the market facilitation function, in the meantime the ENA's Open Network project must continue to make progress on standardisation which is so important to improve access and liquidity in DNO local flexibility markets. Therefore, **the ENA is another body we are particularly concerned with** in terms of limiting the pace of progress towards achieving Government targets. **We urge Ofgem to take a more leading role in setting milestones and reviewing governance arrangements of the trade body** to ensure that where capabilities can be centralised and shared between the DNOs and that this is done to embed standardisation from the outset.

Finally, **we are concerned by the growing scope of responsibilities that are being placed on the FSO** - an organisation which does not yet exist, and which does not currently possess the right technical capabilities to successfully deliver a number of these new digital functions. At all costs, we must avoid placing too much on this organisation during the transition period, as this could result in a hiatus in a number of policy areas so crucial to bettering GB's chance of meeting our decarbonisation targets.

4. **Is Ofgem fit for purpose as a regulator to deliver the increase in electricity supply and grid connection needed? Should Ofgem have a net zero remit?**

Ofgem has been too focussed on short-term work, which has often come at the expense of longer-term strategic work which has the potential for far greater reach in terms of consumer benefits over the long term.

We have been disappointed by the pace of progress from Ofgem on market-wide half-hourly settlement, connections reform, competition in network build and network charging reform - all of which are fundamental enablers to up the pace of progress that GB needs to make to meet its decarbonisation targets at the

lowest cost for consumers. We are also concerned that in its regulation of the retail market, Ofgem is placing insufficient focus on the goal of enabling vibrant competition and innovation. Many recent decisions have skewed and thwarted competition and this could stymie the likelihood of retailers developing the smart products needed to achieve net zero quickly and efficiently.

We agree with the proposals for Ofgem to have a net zero remit so that net zero is prioritised in decision-making more explicitly, but importantly it should not be Ofgem's responsibility to deliver on net zero.

5. **Could the introduction of competition in parts of the network be used to reduce the cost to consumers in delivering a net-zero power system?**

Yes, **we fully support the introduction of competition in onshore network build** that will be introduced through the Energy Bill, **although we are disappointed that Ofgem is delaying the point at which competition for solutions to network constraints can be introduced**. Equally, the priority so far seems to be on introducing competition to build what has already been designed by the ESO. **We would therefore like to see early-stage competition in the build of onshore networks being introduced as soon as possible too**. This will allow new innovative parties to invest in GB's network infrastructure and should drive cost reductions, as well as reduce the time it takes to connect if more participants are active in the building and operation of network infrastructure.

Even before full competition is introduced, there is contestability in the final elements of work on the distribution network, and this too could be introduced at the transmission level. Therefore, we'd like to see faster progress in amending rules to enable this given the role it could play in relieving bottlenecks and reducing final network costs for customers. Government and Ofgem must take a stronger stance to push back against vested interests protecting current monopsonistic market conditions.

6. **Is the five-year business plan cycle appropriate to achieve the overarching objectives of delivering a net zero grid by 2035 and a net zero economy by 2050? How does the pricing review process need to evolve to achieve the UK's strategic objectives on decarbonisation?**

The five-year business plan cycle may be able to evolve at the same pace of technological change and advancement in the energy system as long as there is sufficient flexibility in uncertainty mechanisms - which allow price control arrangements to respond and adapt to change. **The frequency of business plan cycles is currently not a major blocker to the realisation of Government targets.** Overcoming other blockers, such as the current lack of cost-reflective price signals in the market, will be far more impactful in ensuring successful achievement of a net zero grid by 2035 and a net zero economy by 2050.

<u>Planning, local government and communities</u>

1. **What barriers are there in the planning process? Do the proposed changes to the National Policy Statements on energy infrastructure address these adequately? Can the grid development required to be undertaken wholly under the nationally significant infrastructure project planning arrangements in the Planning Act 2008?**

Existing requirements within the National Planning Policy Framework (NPPF) are hindering the development of renewable energy projects across the UK. It is often the case that a large majority of communities want to invest in or support community energy projects but if one person objects to it then it gets stuck in planning limbo. We have seen enormous public support for our 'Fan Clubs', a world-first energy tariff that delivers up to 50% off electricity when the wind blows.

To unlock people-driven onshore wind at speed and scale, national innovation may be required in parallel. For example, similar to Texas, the creation of 'zones' where development and grid is prioritised, has resulted in development targets being exceeded by over 60%[3]. To an extent, the UK offshore wind programme already

promotes this activity through the creation of zones where light diligence has already been conducted, but where the project developer leads on the design, size, consent and build of the projects. Appropriate zones for onshore wind development could include brownfield sites and government-owned land such as motorways and railways.

2. **Is land availability a constraint? If so, how can the constraint best be addressed?**

In our experience, **land availability has so far not been a constraint preventing the development of more renewable generation projects in GB**. At Octopus we've launched an initiative called 'plots for kilowatts' which invites landowners to host onshore wind turbines, where Octopus will match this with community demand. So far over 400 landowners have responded to the plots for kilowatts call - and in almost all cases landowners we've engaged with are open to the opportunity to secure additional or entirely new revenue streams through rent or a share of the project's income.

3. **How can communities be encouraged to accept the infrastructure required to increase capacity? What compensation, if any, might be required?**

Our recent research found that 87% of people would support a turbine in their community if it meant discounted energy rates. Therefore, **to get communities to accept infrastructure in their local communities they must be able to benefit directly or receive some pass-through of benefits** in compensation for accepting the infrastructure. In January 2021, we launched our innovative local wind tariff called Fan Club which offered communities living close to its wind turbines 20% off their unit rate whenever their local turbine is spinning or 50% off their unit rate when the wind picks up. At present, we have three local Octopus Fans, but over 20,000 communities have registered their interest in having a local wind turbine via Octopus' Fan Club. Right now, due to market arrangements, the cost of serving customers in the local area when the wind turbine is generating does not fall 20-50% when the wind is blowing. Therefore, **reform of the wholesale market is needed to introduce locational signals, which will encourage more suppliers to offer locally tailored tariffs and products and therefore more customers to adopt these products and shift in line with local generation**, keeping socialised system costs low for us all.

4. **What potential is there for community energy schemes to contribute to sustainable electrification? How can they be encouraged to develop?**

Octopus Energy is a big supporter of community energy projects in the UK and has invested very heavily in community energy through the likes of Younity and Ripple. **We believe that community energy schemes definitely have a part to play in contributing towards sustainable electrification, but are concerned that the two proposals put forward for consideration at the committee stage as part of the Energy Bill could have unintended consequences.** These could have negative outcomes both for community energy projects and either push up energy bills in the communities where local energy is sited or require all other customers to cross-subsidise them. We are not confident that these proposals address the key issues we see community energy projects facing, and are an administratively burdensome and intrusive way of enabling a route to market for community generation. Additionally, we are worried that not much transparency has been provided on what the amendments mean in practice. They are being presented as an 'in principle' amendment to 'support local energy' which is hard to disagree with if you are not immersed in energy markets and policy.

Instead, there are legislative and policy amendments which we believe would be genuinely helpful in promoting community energy schemes. For example, **increasing pre-development grant funding at the early feasibility stage and amending planning requirements so that the opinion of the individual is given less weight than the opinion of the collective** - reducing the number of projects which get stuck in planning due to objections from very few or singular parties. Finally, introducing locational signals into the wholesale market will also encourage more suppliers to offer locally tailored tariffs and products and therefore more customers to adopt these products and shift in line with local generation, keeping socialised system costs low for us all.

[3] Evidence based on our personal experience, and the following publication: Solution Toolkit: Actions for national/regional governments and policy makers, Energy Transitions Commission, January 2023

5. **What role are local authorities playing in delivering the Government's targets to decarbonise the grid by 2035? Should net zero energy plans be mandated at a local level?**

Octopus Energy is a 50:50 JV partner in Younity which works with more than 200 community groups. A recent survey highlights that the biggest barrier to deploying community energy is the availability of time and resources to deliver projects. Therefore, there is a very real concern that without central planned resource, these local bodies could be overwhelmed with requests.

At present **many local authorities are heavily resource constrained and do not necessarily possess the tools or expertise to effectively translate national policy into local-level plans.** Therefore, simply mandating net zero energy plans at a local level, without any additional enabling action, will not be effective on its own. Central government must better support local authorities and provide stronger guidance on how national plans can be translated and implemented at a local level for this to have any chance of strengthening the role local authorities can play in achieving Government targets. In addition, joint working and collaboration with industry, DNOs and the ESO is needed to upskill local authorities' energy sector knowledge.

June 2023