

RIIO-ED2 Methodology Consultation

Response on behalf of the Solar Trade Association

About us

Since 1978, the Solar Trade Association (STA) has worked to promote the benefits of solar energy and to make its adoption easy and profitable for domestic and commercial users. A not-for-profit association, we are funded entirely by our membership, which includes installers, manufacturers, distributors, large scale developers, investors, and law firms.

Our mission is to empower the UK solar transformation. We are paving the way for solar to deliver the maximum possible share of UK energy by 2030 by enabling a bigger and better solar industry. We represent both solar heat and power and have a proven track record of winning breakthroughs for solar PV, storage and solar thermal.

Respondent details

Respondent Name:	Cam Witten
Email Address:	cwitten@solar-trade.org.uk
Contact Address:	Chapter House, 22 Chapter Street, London, SW1P 4NP
Contact Telephone:	0203 637 2945
Organisation Name:	Solar Trade Association
Would you like this response to remain confidential?	No

Introduction

We welcome the opportunity to respond to this consultation. As an industry, we are committed to delivering the energy transition, and as such our primary concern is that the investments committed over the next price control period align with what the best evidence and analysis tells us will be necessary to achieve net zero by 2050. Multiple independent analyses, including those undertaken by the Committee on Climate Change¹ and the National Infrastructure Commission², have concluded that roughly 40GW of solar will be needed by 2030 to stay on track with the Government's net zero ambitions. The latest Future Energy Scenarios from National Grid conclude that a minimum of 1.4GW of solar generation must be built every year to 2050.³ Our projections show that by 2030 this could mean 24GW of ground-mount solar, 6GW of commercial and industrial rooftop solar, and 10GW of residential solar.

Currently, grid constraints and connection costs are two of the most significant barriers to renewable energy development. The RIIO-ED2 framework must enable network operators to make the necessary anticipatory investments in the network to allow for the increased levels of variable renewable energy generation on the grid that we know will be required to achieve net zero. We are encouraged by the ED2 methodology's focus on achieving net zero, developing flexible networks, and increasing data transparency and availability. However, more can be done to specifically address the barriers to deployment of renewable generation and storage.

The latest figures from BEIS show that **large-scale onshore renewable energy projects are the lowest cost option** for achieving net zero, markedly cheaper than other energy technologies, with large-scale solar delivering the lowest

¹ <https://www.theccc.org.uk/wp-content/uploads/2019/05/CCC-Accelerated-Electrification-Vivid-Economics-Imperial-1.pdf>

² <https://www.nic.org.uk/wp-content/uploads/Final-Renewables-Recovery-Reaching-Net-Zero.pdf>

³ <https://www.nationalgrideso.com/document/173821/download>

Levelised Cost of Electricity (LCOE) of any technology.⁴ The BEIS forecast shows that the cost reduction trajectory of renewable technologies will continue for decades to come, with the LCOE for solar PV potentially reaching £28/MWh by 2040.

Given the significant structural changes needed to transition to a low carbon economy, the proven cost-effectiveness of solar PV, and the barriers to renewable energy deployment created by the constrained state of the network in many parts of the country, when assessing how to best deliver value for money for consumers the RII-ED2 methodology should place a greater emphasis on enabling the deployment of renewable generation, as this will deliver the greatest long-term value to the nation.

Executive Summary

1. To meet the 2050 net zero target, there needs to be huge investment in the both the distribution and transmission networks, especially as we head towards a policy of major electrification of heating and transport. It is critical that the price controls allow for the right level of anticipatory investment in the network now, as underinvesting in the network in the short term could put the delivery of net zero targets at risk down the line. Anticipatory investments should be further encouraged in the ED2 methodology. This investment cannot simply be provided by variable generators. Connection and reinforcements costs are one of, if not the most significant barrier to deployment of distributed generation, and future charging regimes should socialise these costs across a wider user base, including end consumers, to meet the scale of reinforcement required. To that end, our preferred solution of the shortlisted options under the Access SCR would be to move to a shallow distribution connection charging boundary.
2. We have some concerns regarding the Price Control Deliverable uncertainty mechanism. If not properly calibrated to anticipate future needs, by the time funding triggers are reached it may already be too late for physical network upgrades to be deployed to accommodate changes in demand, as these projects can often take years.
3. COVID-19 made clear that future networks will need to be flexible and able to react swiftly to changes in demand. In May National Grid ESO revealed that it will be spending an additional £500 million on balancing the electricity grid over the summer as a direct result of the stress factors that COVID-19 lockdown had placed on the UK's energy system. We would underscore the role of flexibility to not only provide system level benefits and financial relief for generators with respect to the overarching aim of balancing the system.
4. The highest priority for network companies in terms of strengthening competition should be to maximise decarbonisation, while delivering against cost considerations for current and future consumers. We would recommend that innovation and competition mechanisms include specific target outcomes such as maximising the MWp volume of new low carbon technologies connected or minimising MWh of variable renewable generation lost to curtailment.
5. We are supportive of Ofgem's outlined approach to regulating data collection and digitalisation and look forward to being provided with access to monitoring and data, especially for constrained areas. We welcome the 'presumed open' requirements for the networks and recommend including 'presumed collected' requirements on new infrastructure upgrades in line with engineering standards currently being drafted. Expanding collection requirements is especially important for solar and storage assets below 1MW due to the lack of visibility following the closure of the RO and FiT schemes.
6. We do not feel that the Incentive on Connections Engagement (ICE) should be removed; DNOs should remain subject to the ICE in coordination with their respective Connections Strategy. The ICE is a critical mechanism for ensuring DNOs provide good service to all customers that are seeking a connection. The ICE requires DNOs to provide evidence that they have engaged with their connection stakeholders and responded to their needs, and this is a critical function to ensure accountability and transparency of the connections process. Our members regularly report difficulty and lack of clarity regarding fees and process when engaging with DNOs to secure connection agreements. Contrary to removing the incentive, we feel that the ICE should be strengthened, and

⁴https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/911817/electricity-generation-cost-report-2020.pdf

additional targeted incentives and outcomes added to ensure DNOs are providing a good service for connection customers. We would further support a full review of the ICE framework, with a view to ensuring alignment with decarbonisation targets.

7. Totex benchmarking is beneficial but not sufficient to create an efficient dynamic that allows the role of demand to reach its full potential. As greater levels of renewable generation and flexibility assets on the network, particularly solar PV and battery storage, is projected to lead to increased levels of opex and reduced capex expenditure over time, more must be done to fully incorporate considerations of the balance of expenditure within DNO business plans, which have historically been driven largely by capex considerations. We support the move to a totex 'plus' system, where utilisation of capacity on the system is also considered as a key metric to ensure decarbonisation goals are met at the lowest cost to the consumer.

Responses to Questions

Net Zero and Innovation

OVQ3: Do you agree with our proposed approach to a Net Zero re-opener?

As the consultation acknowledges, network investments are likely to rise significantly over the period to 2050. It is therefore critical that the price controls allow for the right level of investments now, as underinvesting in the network in the short term could put the delivery of net zero targets at risk down the line. Anticipatory investments should be further encouraged in the ED2 methodology. The average annual investment required out to 2035 to enable decarbonisation of the electricity networks is projected to be around £3bn.⁵ This is roughly double current the level of investment.

With regards to Ofgem's concerns around the construction of new distribution network assets to allow for low-carbon technologies without guarantees of uptake, we would again point to the work of Vivid Economics and Imperial College on behalf of the Committee on Climate Change (2019)⁶:

1. Significant network reinforcements could be needed to accommodate rapid uptake of electric vehicles and hybrid heat pumps. Overall, rapid uptake of electric vehicles and hybrid heat pumps could increase the costs of maintaining and reinforcing distribution networks by up to 40% by 2035. However, distribution costs would still account for less than 10% of electricity system costs.
2. Network reinforcements are costly and disruptive. Further, the costs of over-sizing network infrastructure are very low, as cable capacity accounts for just 8-10% of upgrade costs. As a result, future-proofing investments by over-sizing network infrastructure is a very low-regrets option and could avoid up to £34 billion of additional unnecessary network expenditure to increase capacity in future if anticipatory investments are properly incentivised.
3. Uncertainty over electric vehicle and heat pump uptake is a major challenge to accurately projecting network investment needs. The RIIO price control framework should be flexible enough to allow distribution network operators to respond to emerging evidence on future uptake, even during a single price control period.
4. Batteries and demand response can reduce the need for distribution network reinforcement. The RIIO price control framework should continue to incentivise distribution network operators to reduce total expenditure (TOTEX) and make use of these solutions where possible.

OVQ9: Which of the uncertainty mechanisms and incentives in Appendix 3 will be most effective in enabling efficient strategic investment?

⁵ <https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-Technical-report-CCC.pdf>

⁶ <https://www.theccc.org.uk/wp-content/uploads/2019/05/CCC-Accelerated-Electrification-Vivid-Economics-Imperial-1.pdf>

We support Ofgem's emphasis on the greater use of uncertainty mechanisms. Managing strategic investment in the energy system will undoubtedly require a suite of tools to adequately respond to the pace of change and evolution of decarbonisation technologies. The tools will range from standard volume drivers to more qualitative scenarios and ex ante analysis. It is important that Ofgem designs uncertainty mechanisms that provide the flexibility to respond appropriately to different scenarios.

Currently, the reopener mechanisms seem to be focused on standard volume drivers. We are supportive of Ofgem's suggested volume drivers that address the amount of load growth and the proportion of that created or delivered by low-carbon technologies. However, we would also recommend that Ofgem should develop additional mechanisms that reflect the growth of flexibility as part of this increase in volume.

Greater levels of renewable generation and flexibility assets on the network, particularly solar PV and battery storage, is projected to lead to increased levels of opex and reduced capex expenditure over time, yet Ofgem and the DNOs' legacy business plans are driven largely by capex considerations. The uncertainty mechanisms proposed should place greater emphasis on this shift in the balance of expenditure, and how DNO business plans need to evolve to reflect this.

We have some concerns regarding the Price Control Deliverable uncertainty mechanism. If not properly calibrated to anticipate future needs, by the time funding triggers are reached it may already be too late for physical network upgrades to be deployed to accommodate changes in demand, as these projects can often take years. This could result in networks themselves being a barrier to decarbonisation, particularly in a scenario of rapid increases in peak electricity demand, as has been projected by the latest National Grid Future Energy Scenarios (FES2020).

OVQ10: Do you agree with our proposals to increase levels of BAU innovation?

Encouraging more innovation as 'business as usual' (BAU) is strongly supported. The current siloed approach to rewarding network companies for performance within discrete categories, or for participation in one-off pilot projects, has failed to deliver meaningful improvement at the whole-system level for grid customers or consumers.

We need a comprehensive, system-wide approach, engrained within the business model of DNOs – not with the goal of demonstrating one-off viability of a particular flexibility or storage technology – but to enable system-wide transformation. The distributed energy industry is already highly innovative, but in some areas is still struggling to find markets for its services. It is this issue that Ofgem must address as a priority to unlock innovation. It is also important that flexibility is considered at all decision points (as opposed to just reinforcement decisions) as this would further flexibility being considered as a BAU activity.

However, we feel that the methodology can go further to embed BAU innovation in by introducing a robust overall framework, something along the lines of a "flexibility market" that could take place every day, rather than every year. Funding for a project, or a single event will not lead to a dynamic competitive process through the price control period and could result in uncoordinated change.

OVQ11: Do you agree with our proposed methodology in relation to the RIIO-2 Strategic Innovation Fund?

The highest priority for network companies in terms of strengthening competition should be to maximise decarbonisation, while delivering against cost considerations for current and future consumers. We would recommend that innovation and competition mechanisms include specific target outcomes such as maximising the MWp volume of new low carbon technologies connected or minimising MWh of variable renewable generation lost to curtailment. Cognisant of the unique regional circumstances of each DNO, each could be assigned certain individualised benchmarks against which their performance in driving competition in these criteria could be measured.

We would recommend that Ofgem set clear targets and signify the intended outcomes for innovation funding – for example, to reduce the cost of monitoring on the network below a specific threshold. This would improve the efficiency of innovation funding in delivering the specific outcomes Ofgem requires from the system.

OVQ13: What are your thoughts on our proposals to strengthen the RIIO-ED2 NIA framework?

We are concerned that the Draft Determination's proposals to reduce the Network Innovation Allowance (NIA) and totex allowance will make it more difficult for PV projects to compete in a post-subsidy environment. The costs of connecting new large-scale PV generation are now almost always being affected by transmission capacity, fault levels, lack of connections or system complexity. Solar PV developers now often must pay significant costs not just for distribution studies but also for transmission studies and reinforcements. In many instances, this can double grid access timescales and increases the upfront costs and risk for developers. The consequence of this in a subsidy-free landscape is to stifle investment and bias development towards the very largest projects. Reducing the totex allowance and the NIA may worsen this situation for large-scale PV projects, and the ED2 methodology should address this.

Our members have also raised concerns that historical innovation incentives have failed to reach their full potential because the penalties to operators if the innovation was not completely successful exceeded the possible benefits. The NIA should recognise that deploying innovation is not risk-free, and that there are risks of Ofgem undermining potentially successful innovations coming forwards through the conditions it establishes under this determination. Any associated risk mitigation or penalties to operators in the interest of maintaining lowest cost should be balanced with a view towards not stifling innovation by being overly punitive.

Modernising Energy Data

OVQ16: Do you agree with our approach to regulating digitalisation and better use of data through the introduction of cross-sector licence obligations?

Yes, we agree with this approach and look forward to being provided with access to monitoring and data, especially for constrained areas. We welcome the 'presumed open' requirements for the networks and also recommend including 'presumed collected' requirements on new infrastructure upgrades in line with engineering standards currently being drafted. Expanding collection requirements is especially important for solar and storage assets below 1MW due to the lack of visibility following the closure of the RO and FiT schemes. Further, DNO network data should be available to aggregators and consumer groups to encourage development of new energy services that could benefit consumers and the energy transition.

Digital, whole-network, real-time monitoring of flows and constraints would enable more efficient network planning and management, as well as unlocking wider whole-market benefits such as locational marginal pricing. We have concerns with the phrase 'demonstrable value' included in RIIO to justify equipment rollout and need clarification regarding what is meant by this. Engineering standards are focusing on ensuring sufficient monitoring equipment at LV level; this is important to provide sufficient data to renewable generators and flexibility providers in particular. Energy data must be sufficiently open and details to provide users visibility of how and where best to engage with the network, give DNOs necessary information to manage network development, particularly with regards to increasing the level of distributed variable generation and storage on the system.

We believe clarification is needed about data equipment being included and data presumed collected during BAU upgrade roll outs. Regarding the type of data that should be collected, there is a difference between the DNOs having mechanisms to procure historic data for models and having models that allows demand response modelling in real time. We are concerned that there is little 'presumed open' data that suggests an accurate picture of the market in real time. Public data is static as it currently stands, and Ofgem should not expect that existing public data will be sufficient to depict constraints on the system in real time.

Data should be published on an ongoing basis, and publicly available data portals should be updated in line with energy data best practice regulations. Ofgem should also instruct that this data is consistently reported, as in RIIO1 data sets changed from year to year making it very difficult to accurately track trends on the system. We welcome the recognition that strategic investment requires DNOs to minimise uncertainty by gathering and making publicly available information on current levels of network utilisation and changes to utilisation based on different forecast growth scenarios.

We welcome the recognition that the networks should install monitoring on parts of the network that are constrained or may become constrained and welcome visibility across DNOs regarding how much of an increase in demand the

existing network can accommodate. It is also important that RIIO-ED2 requires greater transparency regarding the assumptions made in forecasts, whether central or decentralised approaches to investment are taken. This would allow industry to scrutinise plans and ensure cost assessments and values are accurate and evidence based.

DSO Transition

OVQ23. Do you agree with the DSO roles, principles and associated baseline expectations in Appendix 5? Does it provide sufficient clarity about the role of DNOs in RIIO-ED2? Do you think amendments or additional baseline expectations are required?

As RIIO is the primary mechanism for delivering decarbonisation of electricity networks under the current system, we believe that expectations regarding the delivery of net zero and renewable generation should be explicitly set out in the roles and principles. We view DNOs as uniquely capable of carrying out a wide range of functions pertinent to decarbonisation, including:

1. Standardising connections for new renewable generation with proactive engineering works
2. Reviewing of each DNO protection and control policies to assure safety and resilience is maintained
3. Reviewing Engineering Recommendation P2/6 with a view to incorporating accelerated decarbonisation and renewables integration in distribution network planning

We do not think it should exclusively be the realm of DNOs to define forecasting and equipment expectations, with networks being permitted to determine what they deem valuable for network users. Network users would benefit from real-time monitoring of flows and constraints and we would again highlight the baseline expectation should be a 'presumed collected' and 'presumed open' data requirement as part of new network upgrades.

We also encourage Ofgem to incentivise DNOs to develop mechanisms for the sharing and receiving of confidential market data in real time to support the development of flexibility markets. DNOs currently rely on market participants sending the requisite market validation information after the flexibility market event. Better data ingestion processes within secure systems would allow the DNOs to be more confident of the market operation. This would also remove the need for DNOs to procure flexibility far in advance which drives up costs.

In terms of DNO revenues and different demand side technologies, the use of Active Network Management (ANM), non-firm connections, and other implicit flexibility services needs to be explicitly, transparently, and fairly defined, or transferred to DSO activities. Failure to do this continues to undermine a competitive flexibility market from developing.

DNOs need to look at flexibility as a long-term value for the system and the customer and factor in the contribution this can make to integrating a greater proportion of renewables onto the system. In addition, decarbonisation performance should be considered across all roles and expectations. The amount of low carbon generation utilised in a given period could serve to reduce perverse incentives to curtail renewables generation, for example through the use of non-firm connections, when demand turn-up services are available.

As proposed for DNO performance metrics, a network utilisation metric could serve as a useful high-level metric for efficiency. The metric works across DNO/DSO functions and aligning performance measures will help align activities and priorities across entities.

A Whole system approach

OVQ24: Are there any electricity distribution specific barriers to whole system solutions, and if so, are there any sector specific price control mechanisms to address these?

The prioritisation of whole system solutions is a welcome shift in Ofgem's approach. Previously, the STA has called for an analysis of the system wide value low-carbon sources of generation can provide to the grid to ensure that both the benefits and costs of such technologies are reflected adequately in core decision making. This would be similar to

reports previously commissioned by Ofgem such as the Imperial College London report ‘Value of baseload capacity in low-carbon GB electricity system’, which found that ‘increasing system flexibility brings substantial savings in total system cost’.⁷

The ED2 methodology must fully account for short term benefits compared to longer term efficiency. This oversight has often led to suggested reforms that bring about short-term consumer benefits omitting the foresight required to drive long term investment in low carbon generation and flexibility services required to meet our environmental targets. Ultimately, the consumer must be at the heart of any ‘whole system’ approach. We recommend that Ofgem focus on enabling the delivery of consistent reductions in the carbon intensity of electricity, in line with the Government’s legally binding target of delivering net zero at the least cost to energy consumers.

It is also important that Ofgem takes a multi-vector approach that enables the effective integration of heat, transport, and electricity. Relationships between these vectors will need to become much closer in a low-carbon world, with the potential for delivering greater consumer benefits.

Access SCR

OVQ30: Do you agree with the impacts of our potential Access SCR proposals that are identified in this Chapter? Are there additional impacts that are not identified?

The interplay between RIIO-ED2 and the reforms made as part of the Access and Forward-Looking Charges Significant Code Review (Access SCR) will be central to enabling greater penetration of renewable energy technologies. We generally feel that this consultation has adequately captured the potential interplay of the SCR and price controls.

However, it is also important that Ofgem outline the impact that they expect the Access SCR reforms to have on DSO plans. The methodology could be more specific on this point, and the consultation’s implication that network charging reforms will improve efficiency of the existing network. As it stands, it is unclear how this will happen. The roadmap to 2023 also needs to set out clearly what charges will impact efficiency and how.

We would also underscore the following key concerns of STA members with regards to the Access SCR:

1. To meet the 2050 net zero target, there needs to be huge investment in the both the distribution and transmission networks, especially as we head towards a policy of major electrification of heating and transport. This investment cannot simply be provided by variable generators. Connection and reinforcements costs are one of, if not the most significant barrier to deployment of distributed generation, and future charging regimes should socialise these costs across a wider user base, including end consumers, to meet the scale of reinforcement required. To that end, our preferred solution of the shortlisted options would be to move to a shallow distribution connection charging boundary.
2. Extant network constraints should be considered in determining the appropriate approach to revising the distribution connection charging boundary.
3. Disparities between the distribution and transmission charging regimes are creating distortions in the determination of project location and connection arrangements.
4. To mitigate the risk of stranded assets and allow for DNOs to undertake necessary reinforcement works, we would be open to the proposal to explore alternative payment terms for connection charges, for example allowing payment over time, or the introduction of liabilities and securities arrangements. However, it will be critical that any liabilities or securities imposed are set at an appropriate and proportionate level to the development planned so as to not create additional barriers to deployment.

⁷https://www.ofgem.gov.uk/system/files/docs/2018/12/value_of_base_load_capacity_in_low-carbon_gb_electricity_system_2018.pdf

5. Early clarity of abnormal costs and reinforcement costs is vital to avoid abortive development costs and delays to the development cycle. Despite carrying out extensive grid research and approaching DNOs across multiple communication channels ahead of applying for connection offers, these costs tends to only become apparent several months into the process – roughly 4 months’ lead time for vital information – which causes significant delays to further pipeline progression.

OVQ31: Do you agree with the proposed Access SCR baselines for the RIIO-ED2 business plan submissions (ie that Draft RIIO-ED2 Business Plan submissions should use Access SCR Minded to Consultation as a baseline, and that Final Business Plan submissions should use Access SCR Final Decision as a baseline?)

Yes, we agree with the proposed approach and feel this will enable greater alignment of the Access SCR final determinations and DNO business plans.

COVID-19

OVQ34. Do you think we need specific mechanisms in RIIO-ED2 to manage the potential longer-term impacts of COVID-19? If yes, what might these mechanisms be?

COVID-19 made clear that future networks will need to be flexible and able to react swiftly to changes in demand. In May National Grid ESO revealed that it will be spending an additional £500 million on balancing the electricity grid over the summer as a direct result of the stress factors that COVID-19 lockdown had placed on the UK’s energy system. We would underscore the role of flexibility to not only provide system level benefits and financial relief for generators with respect to the overarching aim aims balancing the system.

We would also underscore the rapid development of the Option Downward Flexibility Mechanism (ODFM) over the spring in response to the impacts of COVID-19. We support the development of a permanent solution to this issue and such a solution should take into account compensation for impacted generators, and clearly outline under what parameters disconnection would be required. Given the very short timeline for engagement with the ODFM process, we would welcome early notice and clarity on the process and timeline for further consultations to develop a permanent solution beyond the October sunset date.

We would also highlight that these stress events underscore the need for National Grid and Ofgem to work closely to implement the necessary regulatory and market reforms to deliver the flexible and resilient networks of the future. In line with the Government’s net zero targets, and the ESO’s commitment to support 100% zero carbon generation by 2025, we urge that the RIIO2 process and network charging review be targeted to enable the flexibility required support increased zero carbon generation, while maintaining security of supply and delivering benefits for consumers.

Additional flexibility markets and mechanisms need to be made available to ensure that all curtailment of embedded generation is compensated. Flexibility markets should include clear decarbonisation targets to support the deployment of the lowest carbon options available.

Meet the needs of consumers and network users: Connections

OUTQ7: Do you agree with our proposal to expand the connections element of the customer satisfaction survey?

Yes, we agree with this proposal.

OUTQ18: Do you agree with our proposal to remove the Incentive on Connections Engagement for RIIO-ED2?

We do not feel that the Incentive on Connections Engagement (ICE) should be removed; DNOs should remain subject to the ICE in coordination with their respective Connections Strategy. The ICE is a critical mechanism for ensuring DNOs

provide good service to all customers that are seeking a connection. The ICE requires DNOs to provide evidence that they have engaged with their connection stakeholders and responded to their needs, and this is a critical function to ensure accountability and transparency of the connections process.

Our members regularly report difficulty and lack of clarity regarding fees and process when engaging with DNOs to secure connection agreements. Contrary to removing the incentive, we feel that the ICE should be strengthened, and additional targeted incentives and outcomes added to ensure DNOs are providing a good service for connection customers. We would further support a full review of the ICE framework, with a view to ensuring alignment with decarbonisation targets.

Delivering an environmentally sustainable network

OUTQ57: Do you think our proposed environmental framework will drive DNOs to deliver an environmentally sustainable network?

We are pleased with Ofgem's focus on the environment, sustainability, and decarbonisation in the methodology and especially the recognition that Network companies must enable the transition to a smart, flexible, low cost, and low carbon energy system for all consumers and network users.

It is imperative that the objectives and incentives of the price control framework be completely aligned with the UK's legally binding net zero commitments. Our members consistently report that a lack of grid capacity and the cost, delays and uncertainty associated with obtaining a connection are the largest barrier to new subsidy-free solar deployment.

We have identified the following specific outcomes as potential criteria to be linked to network decarbonisation targets:

1. Undertaking proactive network reinforcement in areas facing congestion constraints to enable a greater volume of low-carbon technologies to connect
 - a. Enabling standardisation of connection on relevant foreseeable infrastructure.
2. Ensuring better coordination and provision of system data:
 - a. Providing renewable energy developers with up-to-date and readily accessible information (i.e. heat maps) indicating network congestion
 - b. Extending the asset registration work currently ongoing under the ENA Open Networks Product 8: System Wide Resource Register to smaller-scale generation, storage and flexible demand (e.g. 50 kW), so as to provide better visibility to system operators
3. Prioritising connection applications for renewable generation and energy storage over thermal generation, and prioritising flexible demand/storage (e.g. to be demonstrated through a pre-existing DSR agreement or something) over inflexible demand
4. Implementing a standardised Assessment & Design (A&D) Fee charging methodology across GB, and extending the Scope of Works mandated to be carried out in delivery of the A&D to assure the point of connection is fit for purpose and aligned with the needs of the generator
 - a. Too many times, the connection becomes inappropriate due to lack of basic works being performed. Additional costs and time delay are just assumed to be appropriate at a pace set by a DNO post-acceptance.
5. Mandating [STA best practice recommendations](#) on avoidance and mitigation of renewable generation curtailment
 - a. Avoiding outages during daytime and during summer for solar PV
 - b. Aligning TN and DN planned maintenance activities to minimise number and duration of outages
 - c. Providing at least 3 months, advance notice of planned outages and proactively offering generators with mitigation options
 - d. DNOs must ensure that they have correct contact info for staff on the generator side and communicate with them using standardised terminology
6. Mandating prioritisation of zero-carbon generation and storage across all applicable innovation funding competitions

Approach to Aggregated Econometric Analysis

COQ1: Do you agree with our proposal to include totex benchmarking in our toolbox for cost assessment in RIIO-ED2?

Totex is beneficial but not sufficient to create an efficient dynamic that allows the role of demand to reach its full potential. As greater levels of renewable generation and flexibility assets on the network, particularly solar PV and battery storage, is projected to lead to increased levels of opex and reduced capex expenditure over time, more must be done to fully incorporate considerations of the balance of expenditure within DNO business plans, which have historically been driven largely by capex considerations. We support the move to a totex 'plus' system, where utilisation of capacity on the system is also considered as a key metric to ensure decarbonisation goals are met at the lowest cost to the consumer.

We support the inclusion of adjustment mechanisms to reset allowances and targets as well as mechanisms to protect against unexpectedly high or low returns. We reiterate our previous submission's call for DNOs to earn revenues based on achieving operational objectives, rather than a Regulated Asset Base. There should be strong emphasis on DNOs developing dynamic local markets in order to achieve their objectives. Trials and pilots have been helpful, but there is frustration across the industry at a 'trials culture', when the procurement of smart services needs to be mainstreamed. To this end, a comprehensive, system-wide low-carbon incentive should be introduced within RIIO2, encompassing connection and integration of low-carbon generation, as well as the facilitation of demand reduction and flexibility.

Disaggregated Cost Assessment

COQ24: How should we treat the fixed costs of procuring flexibility when considering flexibility solutions as an alternative to reinforcement?

Costs related to procuring flexibility could potentially be considered part of capex to provide an added incentive for DNOs to sufficiently utilize flexibility. If negative externalities are to be factored into procurement costs, it is important to also measure whole system benefits including increased adoption and connection of renewable generation through effective flexibility control.

Essentially, these costs should be seen as essential overheads at distribution level and should be treated as such. It is important that the way costs for procuring flexibility are recovered does not distort the participation dynamic, for example, resulting in those contributing more to supporting the grid paying more, thereby negating the value of this contribution. This could particularly deter domestic participation in flexibility markets and lead to wasted storage capacity.