By e-mail to: riioelectricitytransmission@ofgem.gov.uk

Ofgem Consultation: Centralised Strategic Network Plan

Ofgem
10 South Colonnade
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25th August 2023

Dear Konark Anand,

Ofgem Consultation: Centralised Strategic Network Plan – Capgemini Invent response

Capgemini Invent welcomes the opportunity to share our views on Ofgem's consultation regarding the 'Centralised Strategic Network Plan'.

Capgemini Invent is the consulting, innovation, and digital business of Capgemini. We are Europe's largest supplier of systems and technology services to the Energy and Utilities Sector. HFS Research have placed us second globally in their list of business and technology service providers to utilities. Every year we publish the World Energy Markets Observatory (WEMO)[1], the 25th Edition of this will be published in November, the report consists of 600 pages of detailed analysis and insights on the world energy trends.

Our response to the consultation draws heavily from insights and energy market expertise gained in our work across UK market functions in both gas and electricity. Our experience covers a wide range of services relevant to the consultation, including support to numerous energy network and central market clients in business and technology transformations, leading regulatory submissions across both gas and electricity, and contributing to operating model and governance changes at the organisational and industry level. We also provide wider services that cover net zero consumer strategy, development of new market services, smart metering implementation, consolidation, harmonisation, and digitalisation of retail market codes.

Furthermore, in 2022 we established the Energy Markets 2030+ working group, which involved collaborating with senior cross-industry representatives over a 10-month period to define the future energy system. This has produced a compelling vision for the future that is based on a broad consensus of how the energy system should work.

In responding to the questions outlined in the consultation, we have the following key observations and recommendations:

- Whilst the CSNP proposal is comprehensive, we believe further consideration is required to how the ESO will acquire the capabilities needed to fulfil the additional FSO requirements for CSNP launch
- We believe the intervening years between now and 2026 will be critical in establishing competencies and transitioning the ESO into a framework that can effectively deliver the CSNP in 2026

We have responded to the questions specified within the consultation within 'Appendix 1'. We hope you find these insights and suggestions helpful and if you would like to discuss any areas of our response, please do not hesitate to contact Katka Nguyenova[2], Michael Taylor[3], Tom Carr[4] and/or Ranbir Singh[5].

Yours sincerely,

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List of enclosures:

Appendix 1 – Response to Consultation Questions: Centralised Network Strategy Plan

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Appendix 1: Response to Consultation Questions: Centralised Network Strategy Plan

CSNP Outputs and Products

1. ***Do you agree with our broad regulatory approach to establishing the FSO's obligations to deliver the CSNP products?***

We are generally in agreement with the broad regulatory approach that propose for establishing the FSO's obligations to deliver the CSNP products. In particular, we are pleased to see that the CSNP will consider the whole system and incorporate onshore, offshore, gas and hydrogen. As highlighted in previous consultation responses, we strongly believe that a whole system approach, where the full flows of energy, money, data and agreements are understood and optimised, will be critical in designing and operating the future net zero energy system.

However, we are keen to understand how the FSO will be empowered to deliver a compelling cross-industry plan, which includes:

- How the success metrics for the products will be defined and measured
- How distribution network planning and increasing presence of independent providers presence (iDNOs) will be integrate with regional planning, including regional vs national plan weighting
- How the plan will be enforced, whilst maintaining the appropriate buy-in and contribution from relevant stakeholders
- How modelling will integrate with the plan and how the plan will inform data collection strategy/network digitalisation
- How the accuracy of the models will be tested and continuously improved
- How can new technologies (such as AI) be leveraged to improve scenario modelling, test plan quality and close data gaps
- How the plan will be hosted, managed and governed, ensuring transparency for the market to plan investments and whilst maintaining robust change control
- How emerging issues are managed, particularly when related to impacts to in-flight projects and how much redundant work would be considered acceptable through change control

We are also keen to understand what the expectations will be on the ESO with regards to planning and whether an iterative integration of CSNP artifacts is anticipated between now and CSNP launch in 2026. We assume the ESO will continue to produce the onshore transmission-level electricity outputs throughout intervening years to the first publication of the CSNP in 2026. However, we believe further consideration is required on how the additional plan elements proposed as part of the CSNP can be integrated prior to launch in 2026, for example adding the offshore electricity outputs. This will allow analysis to commence and benefits to be realised prior to CSNP launch and should contribute to a higher quality go-live product.

Another aspect that we believe needs consideration is the management of dependant parties and whether a regulatory framework will be incorporated to ensure project handover and delivery is carried out effectively. We are keen to understand the vision for the FSO's role in this scenario and whether they will have any oversight and involvement in project delivery, given that slippage of major works will have the potential to impact the CSNP and dependent reinforcements.

Stage 2 – Identifying system need

2. ***What are your views on the types of system need that we have proposed are covered by the CSNP? Are there any gaps?***

We agree with the system needs identified within the proposal, and, would like to draw attention to a few aspects which we believe require further consideration. Firstly, we agree the FSO should assess year-round system need including summer demand lows, as well as winter demand highs, to understand the full annual range of operability challenges. Furthermore, whilst we agree security of supply will be critical to future system design, factors such as cost of operation and carbon intensity should be factored into future assessments for network reinforcements and/or improving system flexibility. Solely focusing on security of supply will result in robust system operations but may be overly expensive and ultimately deliver sub-optimal value to the consumer.

The proposal suggests that Transmission Operators (TO)s will be responsible for completing connection design and operability studies for local connections, with no involvement from the FSO.

We agree that the TOs' experience should be drawn on to inform the CSNP outputs but would recommend that the FSO retains an oversight or assurance role associated with any outputs to be provided by the TOs.

Local connections are likely to play a key role in system evolution, as such we are keen to understand how the FSO will account for the impacts of local connection activities within the CSNP. Failure to do so could lead to a divergence in effort and ultimately lead to reduced plan effectiveness and impacts to overall system resilience.

We also want to highlight that bringing the proposed analysis of a wider range of system needs together to compile a comprehensive assessment will likely require business transformation to embed the necessary business capability. This should be reflected in how the FSO plans to implement these proposed changes. However, we believe that doing so is the right decision and will result in CSNP outputs that are more aligned to industry needs and, ultimately, will lead to efficiencies within FSO.

As mentioned above (see question 1), we are keen to understand whether monitoring assets and modelling/optimisation technologies will be incorporated into the CSNP. Building a smart, digital network will be critical to enabling whole system flexibility and the provision of accurate modelling and forecasting. As such, we are keen to understand whether the FSO's digital roadmap is intended to become an artifact within the CSNP and whether it will include the utilisation of Advanced Distribution Management Systems (ADMS).

Finally, we believe the CSNP should aim to be whole system meaning DNOs should also be included in system assessment activities, similar to how TOs are currently consulted. This will ensure that distribution network viewpoint and potential impacts are also taken into consideration and incorporated into the transmission network design.

3. ***Do you agree that the time horizon for system need assessment should be extended to 2050?***

We agree that the extending the time horizon for system need assessment to 2050 and beyond will be critical in achieving and maintaining the UKs decarbonisation targets. To ensure that achieving and maintaining net zero remains a key objective of the CSNP, we believe that specifying it within the FSO's licence conditions would be appropriate.

We also recommend considering a rolling-time horizon, rather than treating 2050 as an artificial 'end point', as this would allow for continuous planning beyond 2050 especially within non-Net Zero compliant scenarios.

However, we also believe that the range of the time horizon assessment should be proportionate to the system needs that are being assessed. For example, assessing system needs such as balancing operations, or fault requirements at a 25-year horizon may not be appropriate.

4. ***Do you agree that the FSO should move to a year-round nodal assessment of system need as part of the CSNP?***

Overall, we agree that a nodal assessment of system needs would be beneficial when considering constraint boundaries and costs implications. Whilst the approach contains many benefits, consideration should be given to ensuring how any increased efforts lead to tangible consumer benefits, rather than "nice-to-have" engineering insight. Furthermore, we would be interested in understanding how nodes will be defined and what would constitute nodal boundaries. It may be appropriate to consider factors that influence distributed generation options, such as geography, to define nodal boundaries, in addition to system characteristics.

We assume that the year-round nodal assessment will be measured against seasonal scenarios, rather than a day-by-day assessment, which would likely be disproportionate. Assessing against seasonal scenarios to ensure the plan promotes a resilient, cost effective, zero carbon system would be in keeping with the current ESO planning methodology, as such should be relatively simple to take forward into the FSO model.

5. ***We welcome stakeholders' views on how the FSO can communicate effectively about future system needs?***

Communications relating to future system needs and CSNP plan contents should consider different audience needs. For example, the communication and engagement requirements of technical stakeholders, such as TOs, will be different to local planning bodies or industry regulatory stakeholders. Critically, there must be clear and concise communications that will enable the market to make investment decisions. This will be essential in unlocking energy transition investment.

We would recommend the FSO to maximise the sharing of data to allow other industry parties and innovators to highlight potential improvements to the CSNP products (see our answer to question 10).

We also believe there is an opportunity for the FSO to incorporate outputs from the CSNP into the 'Digital Twin' of the network ("Virtual Energy System"). This could be shared as a live visualisation of the future network, with layers showing the different FES scenarios and the pipeline of projects.

Stage 3 – Identify options

6. What are your views on the FSO establishing minimum design requirements for high-level option designs and are there areas where exceptions are needed?

We agree that the proposed approach would likely be suitable for transmission infrastructure projects, however, it may not be the most effective approach for other key system projects, such as flexibility, generation, or auxiliary services. For these types of projects, it may be more appropriate to put projects out to tender and request the market submits high-level designs, from which the FSO can validate against pre-defined acceptance criteria. This would likely promote innovation and potentially drive overall consumer costs down.

Whilst we recognise that an exception process is likely required, we are concerned that an approach which allows alternative submissions to be submitted to the FSO and placed within the backlog/funnel may promote queue formation, replicating some of the issues observed in today's model. We believe further consideration is required on how to best manage exceptions, such that queue formation is mitigated.

7. Do you have any views on our proposals for considering environmental and community impacts as part of high-level design of options?

The initial proposal seems sensible, and we agree that stakeholder engagement should not be mandated as the priority must be unblocking the energy transition and delivering a resilient, affordable energy system. CSNP transparency will be key in promoting positive market engagement, whereby external parties are able to provide feedback on CSNP artifacts. There may be scenarios whereby the FSO must utilise proactive engagement, but these should be proportionate to the outcome, such as validating key design factors with specialist stakeholders.

We agree that the FSO should consider environmental and community impacts as part of its CSNP activities, we believe that there are factors that require further consideration. Firstly, the FSO should look to leverage established community engagement interfaces that exist with TOs, DNOs and local governing organisations. Secondly, the FSO will need to consider its capability model to ensure that it can effectively incorporate and review environmental impacts on both the production and review of submitted high-level designs.

Furthermore, it may be appropriate to consider how the CSNP could tie into the work being progressed by the Department of Energy Security and Net Zero (DESNZ) on delivering community benefits for network infrastructure[6]. For example, CSNP projects could include tangential community investments, to help minimise local 'not in my backyard' challenge.

8. Do you have any views on our proposal for the FSO to independently decide which network needs it may lead the high-level design of?

In principle we agree with the approach to introduce a governance model which allows the FSO to determine which projects are taken forward and which party leads the high-level design. The FSO should have sufficient flexibility and authority to ensure the most appropriate parties complete the design of projects that will contribute to resilient, affordable, net zero system.

Whilst we agree that the FSO should have overall authority in what is considered a strategic investment, there should be a mechanism whereby TOs and other third parties are empowered to recommend project and Strategic Investments (SI), where appropriate. This could work in a similar way to how the Electric Reliability Council of Texas (ERCOT) manages its interconnection process. This involves ERCOT defining a set of project acceptance criteria for connections applications, from which respective projects are submitted and connections awarded based on technical feasibility and impacts. This method may allow for the market to propose innovative solutions to how it will meet pre-defined acceptance criteria, without

[6] DESNZ, Community Benefits for Electricity Transmission Network Infrastructure

compromising the FSOs ability to maintain control of the planning and decision-making stages of the process.

One concern raised during our assessment of the consultation proposal, was how the FSO would determine their resource requirements (such as team size) to conduct analysis, given the potential for peaks and troughs in the number of projects for the FSO to lead design of. We believe that without a clear definition, the FSO's resource constraints to carry out analytical activities may result in bottlenecks.

9. ***Do you have any views on our proposal for the FSO to set out how and when third parties can be involved within the CSNP?***

Utilising tendering processes for network projects is a model that has been effective globally, notably in Australia and Texas, US. One of the primary benefits from employing a tender based model for network projects identified within the CSNP is that it would encourage innovation, market competition and could help drive consumer costs down. However, careful consideration on project success criteria will be critical to ensuring high quality outcomes. For example, we believe that lowest cost should be avoided as an overarching principle, as it can lead to low quality outcomes.

Furthermore, Ofgem/FSO should consider targeted engagements/sharing of CSNP outputs for comment, or consultation to help identified alternative solutions that may have been overlooked by the FSO. Open access to CSNP artifacts will also help stimulate market competition and innovation.

10. ***Do you have any views on our proposals on data exchange to enable the implementation of CSNP?***

We agree with the open data/ data sharing principles within the proposal. However, we believe a model whereby data is shared upon request should be avoided, where possible, as it can lead to lengthy delays and cross-dependencies. Data sharing between central energy parties has been historically poor and unfortunately, still requires significant improvement, despite the widespread adoption of open data principles. The aim should be to pursue real-time data sharing where possible, and we would encourage Ofgem to capitalise on any opportunities to drive transformative change within central data sharing space.

Stage 4 – Decision-making tools including Cost Benefit Analysis (CBA)

11. ***Do you have any views on our proposals regarding the principles to be followed in the CSNP decision-making framework?***

As mentioned previously, we agree that transparency of CSNP artifacts will be essential in ensuring support and buy-in from key stakeholders and community representatives, whilst also providing clear market signals for investment opportunities. However, we note that the proposal appears to focus on the 'happy path' and believe further consideration is required on dispute management and resolution. For example, will the FSO have the power to enact the CSNP without community approval?

Ultimately, we believe that any decision-making process will only be successful if the desired outputs are clearly defined and understood (e.g., cost vs security vs carbon intensity vs community and environmental impact). Inevitably, there will be differing stakeholder views and hence it is important that there is alignment on the overarching aim which should be to deliver an affordable and effective energy transition.

12. ***Do you have any views on our proposals on the decision-making framework for selecting potential projects to address longer-term system needs?***

In our opinion, Ofgem have identified a strong portfolio of CBA tools for minimising potential uncertainties, scenario evaluation, breakeven and sensitivity analyses. However, the FSO could look to include some broader toolkits to address financial, qualitative and risk-related aspects of proposed projects.

- **Opportunity Cost**: Opportunity cost refers to the potential benefits that are forgone when one alternative is chosen over another. This can therefore be used to assess the value of the next best alternative which has not been pursued. Ultimately, this can assist in understanding the implications of choices made when selecting a project, in terms of foregone opportunities for those that are not chosen.

- **Risk Assessment and Monte Carlo Simulation:** These tools allow the incorporation of uncertainty into any analysis by considering various possible scenarios and their associated probabilities. Monte Carlo simulation helps in quantifying the potential range of outcomes, enhancing the understanding of the risk profile of different decisions. This can therefore be employed to identify high-risk vs low-risk projects and feed into the overall decision-making process

- **Multi-Criteria Decision Analysis (MCDA):** MCDA incorporates multiple criteria and their respective weights into decision-making. This can therefore be used to evaluate alternatives based on various dimensions, such as economic, environmental, and social factors, providing a comprehensive view of each option's overall impact.

There are various approaches that can be used to enhance the overall decision-making process and ensure the correct projects/proposals are being taken forward. However, we would like to flag that the increased expectations for the FSO to fulfil this brief may put additional resource constraints that the current ESO is not set up to fulfil. As such, it may be appropriate to consider how the FSO will be empowered to deliver this brief with a proportionate amount of assurance/regulation from the authority to avoid teams being overwhelmed.

13. ***Do you have any views on the decision-making framework to bring potential projects into the 'delivery pipeline' for nearer-term needs?***

Whilst we agree with the proposed decision-making framework in principle, we recommend that reference to decisions being made in a timely manner will be critical to ensuring efficient plan implementation. Increasing the pace of the network development in a safe and secure manner will be essential to achieving our shared net-zero targets, as such we believe it would be appropriate to re-enforce this principle within the CSNP framework.

14. ***We would welcome views on our proposal to not re-evaluate projects that are in the delivery pipeline, and whether a materiality trigger is appropriate and what criteria might be used.***

Whilst we agree with the principle of increasing plan certainty and, subsequently investor confidence, we believe there are further considerations when defining the timing and thresholds of re-evaluation criteria. For example, projects that are yet to start construction should continue to be assessed as it will be less costly to pause, cancel or amend, with overall sunk cost remaining relatively low at this stage. Once construction begins, it should be agreed that the project is also re-assessed if there are significant issues and/or changes required.
We agree that it would be sensible to consider materiality thresholds and suggest these are defined as part of the benefits case prior to project initiation. We recommend that there should also be some degree of progress monitoring to be including during the delivery pipeline stage to ensure the projects remain on-track and proportionate punitive measure can be enacted where delays result in downstream impacts.

15. ***Do you have any views on our proposal on inclusion of environmental and community impacts in the CSNP CBA?***

As mentioned previously (see question 11 and 13), the speed of delivery should be considered alongside the cost and lowest cost principles should be avoided. Furthermore, we strongly believe that all CBAs should recognise the impacts and costs of failing to meet net zero targets. There may also be opportunities for projects to include targeted community investments (for schools, leisure centres etc) to help offset local challenge.

16. ***Do you have any views on our proposal for the CSNP to include a methodology for assessing and taking forward system operability solutions?***

In principle we see this as a sensible approach, yet we are conscious that its spans across a variety of capabilities and teams within the ESO, especially when considering current short-term operability challenges against long-term operability opportunities. As such, we believe that the ESO/FSO should be provided the flexibility and freedom to recommend how it will achieve these aims to the benefit of the CSNP. This should also include the roles and activities required to effectively prepare the ESO for adopting these additional responsibilities ahead of the first CSNP iteration.

17. ***Do you agree with our proposal for the ESO to review its current approach to assessing short- and long-term solutions, and for the FSO to set out its approach in the CSNP Methodology?***

We agree that it is critical that CBA success criteria does not stifle innovation and that short-term, emergent, innovative work should not be excluded from progressing because of focusing on long-term solutions. The CSNP should establish the target and there should be opportunity for the market to recommend how it can be achieved, whether this is through increasing capacity, flexibility, or alternative technology offerings.

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18. ***Do you have views on our proposals for FSO to develop capabilities to consider different combinations of options and how this should be implemented?***

In theory it would be highly beneficial for the FSO to be the leading entity, but we have concerns that it might be too difficult and time consuming for the ESO to build up the necessary capabilities within the required timeframes. As such, it may be more appropriate to initially utilise a hybrid approach, whereby the ESO/FSO in collaboration with existing authorities on other vectors to make assessments. In this scenario we view the ESO/FSO as the lead party, supported by industry experts, with any conflicts of interests being managed appropriately.

Cross cutting CSNP policy areas and interdependencies

19. ***Do you agree with our proposal to introduce a requirement, as part of the new CSNP licence condition, for the FSO to make recommendations on additional interconnection and OHAs opportunities between GB and other markets?***

Yes, we strongly agree that the FSO will be critical in determining the CBA of interconnectors and offshore hybrid options. Interconnectors will be critical to a future net-zero grid and should be considered along with other strategic network options.

However, we are concerned that the FSO will only fulfil an advisory role for offshore developments, such as offshore wind and interconnectors. Offshore developments will have a significant impact on the onshore system, as such present a risk to CSNP certainty. Further consideration should be given to the FSOs role in offshore development decision making, perhaps as an expansion to ESO's current role in Offshore coordination.

20. ***Do you agree with our proposal that the FSO should use reasonable endeavours to support relevant stakeholders as part of the offshore asset development process?***

We agree that the FSO will have a key role in supporting relevant stakeholder as part offshore asset development processes. Collaboration will be essential, as it is unlikely that the FSO will have the specialised capabilities to model all considerations, such as marine environmental impacts, for offshore development. However, we believe the FSO should be the final arbiters on whether projects progress, to mitigate the execution of poorly planned developments, which have already contributed to increased network costs in today's system. Offshore development should be considered in conjunction with onshore developments, with the relevant stakeholders being consulted to support the final FSO position.

21. ***Do you agree with our proposal that the FSO assess third-party options under the CSNP and recommend delivery by competition where proposed solutions meet the relevant competition criteria?***

As mentioned previously, we are supportive of a competitive delivery model. However, the consultation suggests that competition will only be leveraged in certain circumstances which we assume may only relate to ancillary services, technology support, flexible services etc. If this is the case, then we believe that consideration should be given to widening the scope to including third party TOs.

This model has seen success in the Texas REZ initiative, where it contributed significantly to rapid infrastructure delivery. However, this approach will require further consideration on how independent TOs will be regulated. However, recognise that adopting an ASTI-style approach of exempting critical projects from competition would also be appropriate where savings of competition are outweighed by the time delays which are incurred.

22. ***What are your views on whether changes to the SQSS or obligations on licensees are needed to support the CSNP – where specifically are these changes needed and when do they need to happen by?***

We are unclear whether there are any specific license conditions that would require a review. However, if this is the case then this type of work should be addressed through a wider network code review, consolidation, and simplification exercise.

Whilst we believe that the FSO should have the final say in most dispute scenarios, we recognise that where there are safety concerns, it might be appropriate to consider having an independent adjudicator/reviewer.

23. ***Do you agree that the FSO should evaluate the climate resilience of the long-term whole-system CSNP?***

Yes, we believe that incorporating climate resilience considerations into the CSNP will be critical in maintaining system resilience and security of supply. Further consideration should be given to the modelling

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approach, as the use of historical data to forecast system/engineering requirements may no longer be sufficient in this age of disruption and changing weather patterns.

As such, we believe that the FSO should investigate alternative modelling approaches to improve accuracy of forecasts/predictions. A suggestion could be for FSO to engage with sectors such as catastrophic risk actuaries, to see whether there are any different event-based approaches that could be adopted to improve modelling accuracy.

Building standards/engineering safety factors may also need to be reviewed to ensure infrastructure is built to the required standard. This may require collaboration with a variety of experts that would likely sit outside the FSO's capability field. For example, undertaking the climatic resilience of projects may require input from environmental specialists, geotechnical engineers, hydrologists, and hydrogeologists to effectively account for increased frequency of weather and flooding within the planning stage. Whilst we appreciate this will increase near-term engineering costs, it will promote system stability and help mitigate the impacts of climate change.

24. Do you agree with the proposed position on the treatment of connections in the CSNP?

We believe the risk associated with overbuilding the network is minimal when compared to the risk of failing to deliver net-zero. The current 'first come-first serve' connection process does not work and therefore, unblocking this should be a primary objective of the CSNP by providing clear signals to the market as to where generation projects can potentially be connected. We appreciate that this work is ongoing through the 'connections reform' initiative and look forward to seeing how the outputs promote the CSNP.

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