Strategic Planning of Networks
Ofgem
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22nd June 2023

Dear Joanna,

Consultation on Future System Operator supply and demand modelling

EDF is the UK's largest producer of low carbon electricity. EDF operates low carbon nuclear power stations and is building the first of a new generation of nuclear plants. EDF also has a large and growing portfolio of renewables, including onshore, offshore wind and solar generation, and energy storage. With around six million electricity and gas customer accounts, including residential and business users, EDF aims to help Britain achieve net zero by building a smarter energy future that will support delivery of net zero carbon emissions, including through digital innovations and new customer offerings that encourage the transition to low carbon electric transport and heating.

We welcome the opportunity to respond to the 'Centralised Strategic Network Plan: Consultation on Stage 1 – modelling future supply and demand' consultation. We welcome Ofgem's consultation which is seeking to revise the modelling of future supply and demand by the FSO as we consider this to be a positive first step in modernising the FES.

There are a number of key issues that we believe needs further consideration:

Future use of FES

- We agree that adapting FES for network investment is a priority. However, as FES serves several purposes, it is questionable to redesign FES around one purpose without considering the other purposes, which will drive different requirements.
- The scenario design objectives for efficient network investment may not align with scenario design objectives for other purposes. They cannot be considered totally separate.

Modelling

- We welcome the review of scenario design and treatment of uncertainty
- However, network investment recommendations (and other FES applications) will need to continue to recognise and manage uncertainty and these uncertainties include many outside the control of the FSO:
    - Local or national government policy support for upstream technologies e.g. a particular generator type;
    - Downstream Government Incentives and uptake rates e.g. heat pump deployment;
    - Limited visibility over CfD allocation, investment decisions etc.;
    - Barriers to deployment e.g. supply chain bottlenecks;
    - Consumer engagement uncertainties e.g. around smart charging;

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- Pace of technology development.
- Whether through scenarios or sensitivities, network planning will need to consider uncertainty.

HND as blueprint for future system planning
The use of a single scenario was appropriate and necessary for the Holistic Network Design (HND) and HND Follow Up Exercises because of the clarity, scale and lack of alternatives for delivering the 50GW offshore wind target. However, the political and market uncertainties for future decisions are likely to be more nuanced; therefore the HND process should not be considered as the blueprint for future system planning.

FSO Role
It is important that the Government and Ofgem set out clearly the regulatory framework landscape within which all the entities will operate and seek to implement changes of energy policy. Further engagement on this will be necessary as the relationship between FSO / Government / Market begins to crystallise.

Should you have any queries or wish to discuss our response, please contact me or Natasha Ranatunga at Natasha.Ranatunga@edfenergy.com.

Yours sincerely,

Guy Buckenham
Head of Strategic and Emerging Markets Policy

Attachment

Q1. Do you agree that we should move towards pathways instead of scenarios, to provide greater clarity on the type of investments required under the CSNP?

We would welcome clarification on what distinguishes 'pathways' vs. 'scenarios' in this context. Currently, the scenarios set out in FES are largely technology agnostic; we would welcome clarity on whether the pathways are intended to exclude (or favour) specific technologies.

- Three of the current FES scenarios achieve net zero and explore dimensions of genuine uncertainty (behavioural change and achievable pace of delivery)
- It is unclear whether today's under-delivery of network infrastructure is wholly associated with the scenario design (as implied by the consultation paper or whether it is at least in part due to other factors such as changes in policy, rapidly falling RES costs (with which networks can't keep up) and under-delivery of networks against recommendations.

Q2. Do you agree that there should be a single forward view of the near term for all pathways?

We welcome the narrowing of the pathways in the very near term particularly if it is based on the contracted positions in place (i.e. using data from TEC and embedded registers); the range of existing FES is very broad in near-term and could be narrowed. Beyond this timeframe, there is a risk that locking a view could create a disconnect between the FES and industry developments e.g. speed of heat pump roll out. Even over the past 3 years the electricity generation mix and policies have changed significantly[1] and we doubt whether it would be sensible to restrict FES to a single view for more than 3 years ahead.

The optimal approach would be to consider each type of input to understand how far ahead it can be regarded as fixed. A single scenario may be appropriate for the near term (with sensitivity analyses recognising that the market may delivery projects faster or slower than planned).

However, as outlined in our introduction, we recommend that scenario/pathway redesign is considered alongside a review of analytical methods. Network investment recommendations are driven both by scenario design and their evaluation (currently through LWR). It is not necessary to abandon scenarios to increase the importance of a preferred strategic pathway.

[1] In April 2023, the electricity generation mix was gas 34.4%, wind 24.6%, nuclear 14%, biomass 5.5%, coal 0.1, solar 6.1%, imports 13%, hydro 1.5% and storage 0.8%. In April 2020, the electricity generation mix was gas 32.28%, wind 17.56%, nuclear 19.93%, biomass 7.63%, coal 0.54, solar 8.4%, imports 11.41%, hydro 1.45% and no storage recorded. https://www.nationalgrideso.com/electricity-explained/electricity-and-me/great-britains-monthly-electricity-stats

Q3. Do you agree with our proposal to have Net Zero compliant pathways (number to be determined by FSO), with a separate counterfactual demonstrating the scale of activities and investment that falls short?

Yes, we agree that Net Zero compliant pathways have to be central to FES; we think it is appropriate that a separate counterfactual is produced to demonstrate the scale of activities and investment that falls short.

We believe there is a case for recognising the risk that Net Zero may not be met in 2050 as there are several large uncertainties outside the remit of FSO (e.g. deployment of heat pumps).

Considering under-delivery within a pathway or a sensitivity could potentially lead to similar analytical outcomes.

Q4. Do you agree that the pathways should run to 2050, and if not, why not?

Yes, this should be the starting point for FES, however we feel that the FES could keep this assumption under review and later shift to a longer-term horizon.

Eventually it will be prudent to extend the analysis beyond 2050. It should be recognised that 2050 won't be "steady state", whether we reach net zero or not. Early zero carbon assets will close and be replaced by newer ones – maybe with different technologies, maybe in different places. However, we recognise the substantial scale of the challenge in adapting FES and we agree with Ofgem that post-2050 extension does not currently appear a priority.

Q5. Do you agree that the model should develop the capacity to include extreme data ranges when requested of the FSO in its role as strategic advisory body?

Yes, we agree that the model should develop the capacity to include extreme data ranges. For example, it is important that a wide range of adverse weather scenarios are considered (e.g. a year with extended wind lulls may result in a different mix of generation output to a typical year)

Q6. Do you agree with our consultation position on modelling network constraints?

Yes, we agree with the position should take account of near-term constraints in establishing the FES pathways to improve the quality of its recommendations. We believe that the current process is no longer appropriate as it does not incorporate network or operability costs and we believe that the broad category of 'network costs' (network constraints + network investment + losses) need to be within scope in scenario design (in contrast to the current FES; as omission could lead to drastically uneconomic outcomes.

It is important for Ofgem to set out what it considers to be short-term and long term for this purpose. In the short-term, constraints can be quantified reasonably accurately; there would also be a need to consider how quickly constraints could be resolved. We believe that in the medium to long-term, it may be harder to quantify the optimal balance between network

investment and constraints. However, omission of network costs altogether would continue the problem of drastically uneconomic pathways.

We would welcome the opportunity to review Ofgem's associated guidance to a licence condition as well as the FSO's methodology which would set out the detail of how constraints will be modelled, as well as the point in time at which the model would become unconstrained.

Q7. Do you agree with our consultation position, and do you have a view on which data principles should be possible to adopt for the first FES?

Yes, we agree that the energy system input and output data used in the FES should be treated as open by default, including the models and algorithms used to produce the data. We also believe that when auditing previous assumptions, it should be noted that discovering with the benefit of hindsight, that a decision turns out to be wrong does not automatically make it a bad decision at the time.

Therefore, we support the principles and progress on transparency in data sources and analytical methods. We would like to understand how Ofgem expects commercially sensitive information to be managed. Commercial data is shared with the Transmission Operators (TOs) by developers in order to support the development of a business case for funding network investment. This information is currently incorporated into FES by the ESO. There may be a risk that developers would withhold information or data which would mean that the quality of information feeding into FES process is reduced.

Q8.Are there specific stakeholder needs cases for publication of data, including the format of outputs?

At this stage we do not have specific needs for data format (but precedents should be considered when designing data formats). Any potential changes to data format should be consulted upon and should not be subject to frequent changes.

Q9.Are there specific data outputs associated with the FES that we should mandate?

At this stage we have not identified specific data outputs that Ofgem should mandate. However, we would welcome greater distinction of regional data; a similar approach could be adopted at transmission level that is in place at distribution level – data workbooks with data sets at GSP.

Q10. Do you agree that regional and/or industrial hub pathways should be included in the FES?

Yes, we agree that regional and/or industrial hub pathways should be included in the FES. We also believe that the publication of additional pathways and data at a regional and industrial level will provide greater clarity and detail to support regional planners who use the FES.

We believe that the feedback loops and interactions between 'top down' and 'bottom up' approaches (and role of FSO in resolving conflicts between these perspectives) needs to be considered more broadly. We would welcome further consultation on this issue of how the FSO manages conflicting perspectives.

Q11. Do you agree with our proposal for a 'major' FES in the year prior to the main CSNP publication, with smaller annual updates in the intervening years?

No, we do not agree with Ofgem's current proposal for a 'major' FES in the year prior to the main CSNP publication, with smaller annual updates in the intervening years. Reflecting on the significant changes in the previous three years does emphasise how quickly things can change. We recommend annual updates.

The FES is used in a number of ways and feeds into other work; reviewing network constraints within the FES cannot be looked at in isolation. We think that a holistic review of FES, its inputs, outputs and uses is necessary.

Q12. Do you consider that longer-term evolution of energy supply and demand modelling should head in the direction outlined above and if so how?

It is challenging to reach a position at this stage as we think that there needs to be a holistic review of FES scenarios and how they consider uncertainty. However, it should be noted that the likelihood of ever getting a fully optimised system is low. Assets age, demand changes, technologies (and their costs) evolve etc – so the "ideal" optimal system continually changes, and the real system is always playing catch up. Nevertheless, there is scope to improve.

We welcome Ofgem's intent to recognise uncertainty and strive for continuous improvement. Models will never predict the perfectly optimal mix, as the system is too complex and many aspects unknowable. We believe that the framework for considering uncertainty is critical, and should be considered as soon as practicable (e.g. through a roadmap).