

Use Cases Advisory Group

Meeting 6 minutes

Date: 19/01/2024	Location: Virtual
Start: 10:00	End: 12:00

Participants

Attendee	Organisation
Professor Jim Hall (Chair)	University of Oxford
David Evans	Energy Systems Catapult
Dr Robyn Lucas	Modo Energy
Nick Watson	National Grid Ventures
Peter Philip	Scotia Gas Networks
Sarah Rigby	Scottish and Southern Electricity Networks
Alexi Reynold (Guest speaker)	ESO
Joanna Webb (Technical Secretary)	ESO
James Edwards-Tombs (Observer)	ESO
Dozie Nnabuiife (Observer)	ESO
Precious Akponah (Observer)	ESO

Apologies

Attendee	Organisation
Corrina Jones	National Gas
Dan Monzani	Aurora Energy Research
Dr Hilary Williams	Energy Systems Catapult

Agenda

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1. **Welcome, introductions and apologies for absence**
 2. **Minutes of last meeting and conflicts of interest review**
 3. **Update on the ESO Virtual Energy System programme, use cases and advisory groups**
 4. **Introduction and purpose of session**
 5. **MVP and roadmap**
 6. **Whole energy system overarching use cases**
 7. **Technology Insights**
 8. **Final reflections**
 9. **AOB and next meeting**
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Discussion and details

Topics discussed

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1. **Welcome, introductions and apologies for absence**
 - The Chair welcomed everyone to the meeting.
 - The Technical Secretary gave the apologies for absence:
 - Corrina Jones – National Gas
 - Dan Monzani – Aurora Energy Research
 - Dr Hilary Williams – Energy Systems Catapult
 2. **Minutes of the last meeting and conflicts of interest review**
 - The minutes of the previous advisory group meeting on 17/11/23 were approved as an accurate record.
 - No conflicts of interest were declared.
 3. **Update on the ESO Virtual Energy System programme, use cases and advisory groups**
 - The ESO gave an update on the programme, including:
 - The progress on the technical alignment and interoperability with the overarching cross sector architecture of the National Digital Twin Programme. The team has been focusing on identifying the interfaces between the components of the energy system data sharing infrastructure and the technical process and policy requirements for the integrated Minimum Viable Product (MVP).
 - The programme's recent engagement with other industries' initiatives STREAM and Transit.
 - Updates on the Data and Technology Advisory Group and the People and Process Advisory Group, who are focusing on the MVP (timelines, phases and measures of success), managing and mitigating security, the trust framework, Open Energy and identifying options for the long-term operating environment.
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- Updates on the use cases:
 - CrowdFlex has formally started and is working on designing the trials and models.
 - Powering Wales Renewably is halfway through the Alpha phase and has carried out extensive engagement with stakeholders for the development of the combined network modelling platform, gaining access to data sets and building use cases.
 - Advanced Dispatch Optimiser is going through the internal strategic review process to determine the next steps.
 - The FSO developments are progressing, with roles in strategic planning, security of supply, resilience, market development and Net Zero insights, and the ESO are building capabilities in these areas. The Central Strategic Network Planning and Regional Energy Strategic Planning roles.
 - The Virtual Energy System has been shortlisted for The Engineer 'Collaborate to Innovation' awards, in the category of Information, Data and Connectivity.
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4. Introduction and purpose of the session

The ESO summarised the briefing pack, the aims of the meeting and the input the ESO would like from the advisory group.

5. MVP and roadmap

- The ESO gave further details on the proposed pilot and MVP development and timescales, how they are linked to Ofgem's proposed priority use cases for the Data Sharing Infrastructure and how success will be measured on these projects.
- It was also explained how the three ESO led use cases will also fit into this roadmap.

Reflection points

- ***Does this representation of the component parts of the MVP cover the scope you would expect to see?***
- ***Should any elements be accelerated or decelerated?***

Discussion

- It was discussed whether the Virtual Energy System and the data flowing through the system will be considered Critical National Infrastructure (CNI). The system will be a cyber-physical system, exchanging operational data and will be relied upon to make operational decisions. The ESO have engaged the security services on the programme, but further clarification will be needed on the systems' CNI status.
 - The reasons why outage planning, and strategic planning were decided upon for the pilot and MVP phases was discussed, and how these decisions relate to Ofgem's proposed priority use cases.
 - The timelines between the outage planning pilot and the strategic planning MVP were discussed and how they could potentially overlap to expedite the programme, while still taking advantage of learnings gained in the pilot phase.
 - Deciding on partners for the MVP projects was discussed, and that it will need to be an innovative and flexible process due to the timelines proposed.
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6. Whole energy system overarching use cases

- The ESO summarised the reasons for looking at thirteen whole energy system overarching use cases, building on the 26 high-level use cases previously identified, and incorporating them into a three-tier structure.
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Reflection points

- **What are your thoughts on our methodology?**
- **Do you agree with the three levels approach we have adopted?**
- **Are there any other overarching use cases that we have left out?**
- **Are there any other time horizons missing from the list identified?**

Discussion

- The group were supportive of the approach and the three-tier structure proposed by the ESO.
- The ESO are planning to continue to refine the details, such as giving clear definitions to each overarching use case and expand on how these use cases might overlap.
- It was noted that there are several ways to look at the overarching use cases, e.g., by the different linked assets and capabilities needed to operate the energy system.
- The overarching use case structure means that it will be better future proofed as new vectors can be added at this top level.
- It was observed that the overarching use cases are a mix of purposes, processes, assets and activities, and are quite broad. Some could benefit from operational timescales being added when the ESO inputs more details in the future.
- It is important to keep one of the energy system priorities (improving the transmission network) at the forefront and focus on how the Virtual Energy System can help meet this challenge following the Nick Windsor report.

Reflection point

- **Do you agree with the definition of Planning Whole Energy System?**

Discussion

- It was noted that there are crossovers between the Planning Whole Energy System high level use cases, so they need to be clearly defined, timescale factors included, and national and regional planning aspects added when the ESO refines these use cases.
- When further developed, the Planning Whole Energy System high level use cases could incorporate other priorities such as security of supply and affordability.

Reflection point

- **Do you agree with the definition of Demand Side Management?**

Discussion

- It was noted that there is some overlap between use cases, such as prosumers and smart demand response.
- The question was raised whether smart demand response is at the right level in the hierarchy and that some of the use cases are aims and some are a name of a group, and these use cases will benefit from more detailed descriptions to clarify.
- It was observed that the use cases could benefit from reference to their timescales, e.g., in real time or long term, such as planning and investments in the transmission and distribution networks.

Recommendations

- It was suggested that the Interconnectors and Linking System Markets whole energy system overarching use cases could incorporate meshed grids.
- The overarching use cases could benefit from more detail, particularly on their timescales and how they interact with each other and overlap.
- Under the Planning Whole Energy System use cases, it was suggested that the Predict Localised Energy Production high level use case should explicitly include Predict Localised Energy Demand and Generation.
- It was suggested that heat should be more of a priority in the Planning Whole Energy System use cases.
- Adding demand reduction or efficiency to the Demand Side Management use case, possibly as a separate category or part of an existing category.

- It was suggested that in the Demand Side Management use cases would benefit from detail on timescales and in the future the group could discuss further, particularly in relation to long term planning and investments in transmission and distribution networks.

7. Technology Insights

The ESO gave an overview of the Technology Insights function in the Innovation team. The team horizon scans across energy and digital technologies for developments that could have a high or transformational impact on the energy sector.

Technology Insights provide input to the Virtual Energy System programme about technological developments that might need to be incorporated into the plans and roadmap.

The team gather initial information about an emerging topic and make an assessment of its impact. The topics are prioritised, and deep dives are carried out on the high priority categories, and topics are continuously monitored. These deep dives include opportunities, threats, adoption and architectural considerations, and legal and ethical concerns. The team produce resources for internal use, such as reports, articles, webinars and are creating a library of these resources.

Energy Technology Radar

Reflection points

- ***Do you agree with the technologies highlighted as relevant to the Virtual Energy System?***
- ***Are there other highly relevant topics not highlighted or missing?***

Discussion

- It was noted that there are several types of nuclear reactors on the horizon, and it might be appropriate to include these other than Small Modular Reactors.
- Some technologies such as vehicle to grid are not mature in the market in policy or consumer behaviour, but aren't included on the radar as they are technically mature.

Data and Digital Radar

Reflection points

- ***Do you agree with the technologies highlighted as relevant to the Virtual Energy System?***
- ***Are there other highly relevant topics not highlighted or missing?***

Discussion

- The process for estimating the timescales for the adoption of a new technology was discussed, such as what sources of evidence and information are consulted. The team keep abreast of a wide range of sources and regularly revisit each category to review its assessment and priority level, incorporating any new evidence.
- The team's role in the FSO was discussed and how the reports and analysis produced could potentially be published and used externally in the future.

Recommendations

- It was suggested that Graph Data Science would be relevant to the Virtual Energy System.

8. Final reflections

- The Chair thanked the group for their attendance and valuable contributions.

9. AOB and next meeting

- The date and time of the next advisory group meeting was confirmed as Friday 15th March 10am-12noon