

Use Cases Advisory Group

Meeting 3 minutes

Date: 21/07/2023	Location: Virtual
Start: 10:00	End: 12:00

Participants

Attendee	Organisation
Professor Jim Hall (Chair)	University of Oxford
Corinna Jones	National Gas
Dan Monzani	Aurora Energy Research
Dr Hilary Williams	Energy Systems Catapult
Nicholas Watson	National Grid Ventures
Peter Philip	Scotia Gas Networks
Sarah Rigby	Scottish and Southern Electricity Networks
Ankit Patel (Observer)	Arup
Dozie Nnabuife (Observer)	ESO
Joanna Webb (Observer)	ESO
Matt Burnham (Observer)	ESO
Precious Akponah (Observer)	ESO
Vikaran Khanna (Observer)	ESO

Apologies

Attendee	Organisation
James Edwards-Tombs (Observer)	ESO

Agenda

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1. **Welcome, introductions and apologies for absence**
 2. **Minutes of last meeting**
 3. **Conflicts of interest review**
 4. **Update on ESO Virtual Energy System, use cases and advisory groups**
 5. **New use cases**
 6. **Strategic Innovation Fund and challenges**
 7. **Final reflections**
 8. **AOB and next meeting**
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Discussion and details

Topics discussed

1. **Welcome, introductions and apologies for absence**

- The Chair welcomed everyone to the meeting and introduced the new attendees.
- The Technical Secretary gave the apologies for absence:
 - James Edwards-Tombs – ESO

2. **Minutes of the last meeting**

- The minutes of the previous advisory group meeting on 19/05/23 were approved as an accurate record.

3. **Conflicts of interest review**

- No conflicts of interests were declared.

4. **Update on ESO Virtual Energy System, use cases and advisory groups**

- ESO gave an update on the Virtual Energy System programme, including:
- Updates on the current use case projects, including the significant news about the Beta phase funding being awarded by Ofgem for the CrowdFlex project.
- The Common Framework workstream and two other advisory group updates, and their work on the detail of the structure and content of the best practice guidelines, which are to be announced in August.

Recommendation

- That a deep dive into the CrowdFlex project is included in the next advisory group meeting, to include the project's aims and how it will be integrated into the existing energy system.

5. New use cases

- ESO provided some further detail about new use cases that are proposed or progressing.
- The Future Systems & Network Regulation use case is at early stages of discussion, and could potentially give confidence in network operator decisions about network upgrades, and planning and monitoring, within timescales.

Reflection Points

1. ***What digital tools, up to and including Digital Twins, can we deploy to close the loop between planning and monitoring, what is needed, and what is feasible by when?***
2. ***Is developing digital twins the right output/goal for the next price control period; if not what are the other options? If yes what are the key enablers and what are the delivery timescales?***
3. ***Who should take a leadership role for the process and strategy on digitalisation in the energy sector?***
4. ***Would a distributed and decentralised data architecture facilitate the assessment of optimal national, and regional, balance between flex and network investment requirements?***

Discussion

- It was noted that some of the proposed use cases partially address network planning and regulation. It was highlighted that there must be confidence in the outputs of models and digital twins if they are to be used in regulatory decisions and policy making. It would depend on the complexity and if two-way information is needed as to whether there would be benefits of using digital twins.
- It was suggested by the group that the FSO could take the leadership role for the process, delivery and strategy of energy digitisation because it will have wider roles across the whole energy system, not just in electricity. Ofgem and DESNZ would set the overarching vision, with overseeing and outcomes roles, but perhaps digitalisation should be a continuous process and shouldn't be restricted to price control timescales.
- Each of the networks are different with different tools and technologies. The key is to enable the different systems to talk to each other with standardised rules, which is the key output of the Virtual Energy System. For the system to be a success the different networks and operators need to contribute to its design. The programme needs to consult with and contribute to industry working groups on energy digitalisation.
- Priorities and investments (e.g., in a distributed and decentralised data architecture) need to be based on what can be achieved, such as with demand side flexibility. The CrowdFlex project is looking at the complexities of domestic flexibility, which could later be built on for industrial and commercial markets, which are partially established.

Reflection Points

5. ***What challenges/bottlenecks do you foresee in implementing a digital twin carbon accounting solution?***
6. ***What incentives would help in the adoption of such a solution?***

Discussion

- Members expressed support for the carbon accounting use case, with the need for standardisation of the approaches and targets that already exist.
- The challenge is accessing the data in a consistent and useable manner.
- It was also noted that this is a complicated area, with many factors to consider, such as the data accuracy from imported raw materials and life cycle emissions.

6. Strategic Innovation Fund and challenges

- ESO expanded on the Strategic Innovation Fund (SIF) and Network Innovation Allowance (NIA) funding arrangements that are available to the energy industry, and also on innovation projects in relation to Business as Usual (BAU) projects.

Reflection Points

7. ***How does the SIF funding framework compare to other countries funding research and innovation in the energy sector to achieve their net zero targets?***
8. ***Innovation projects bring together disparate teams of people/organisations for projects which disperse post completion. How do we create enduring collaborations and sharing of learnings/knowledge?***

Discussion

- It was noted that the SIF encourages diverse organisations and teams to work together and work collaboratively. There are advantages and disadvantages to this arrangement, but it does encourage diversity, different ideas and experimentation, which is good for innovation.
- UKRI has an overview of all innovation and make the funding decisions but is it joining up digital twin organisations and projects? But that overall vision and direction of digital twins isn't its role.
- A number of other countries have more centralised, research-based innovation programmes.
- It was highlighted that successful innovation projects need to be ready for BAU. It was also noted that some projects are not suitable for the SIF framework as they are already BAU. The benefit of the SIF framework is that it offers the flexibility to move projects to other funding sources such as NIA. The results of both SIF and NIA funded projects must be open and published, and their benefits available to other organisations.
- It is restrictive if a project fails to be awarded funding and there is no alternative route for innovation funding for that project.
- There is the limitation of applications needing to be led by one of the energy networks organisations. Innovators could potentially sandbox projects to test ideas, that could benefit the regulated organisations and consumers, but this is not possible with SIF.

Reflection Points

9. ***Ideation: suggestions for project ideas***
10. ***Identification of potential partners and relevant projects for collaboration***
11. ***Lessons learned from previous SIF projects and/or explored similar challenge areas***

Discussion

- Heat networks (district heating is deployed in some countries on the continent) and heat pumps were suggested generally as an area of interest and concern; the expectation that a significant amount of decarbonisation will come from heat pumps and their adoption in urban areas. What are the digitalisation and digital twin implications of heat?
 - Gas peaking plants and their operation and consumption of gas in relation to availability of gas in the system. The question of their future use on the system, possibly for hydrogen.
 - Links between the gas system and the electricity system and how they work together.
 - Connections and making best use of current and existing capacity was suggested as a potential project. The DNOs role in managing networks and customers around connections, including local area energy use and community schemes.
 - Constraints and being able to dynamically understand constraints across all voltage levels.
 - Modelling interconnections to other countries, biofuels and carbon capture.
 - There is a lot of work taking place in creating digital twins and models of buildings and it would be useful for these to include energy use and flexibility. This could be used to highlight
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and prioritise energy efficiency improvements and behaviour change initiatives. This could be integrated with CrowdFlex to provide a more complete picture of building energy use.

7. Final reflections

- The Chair thanked the group for their attendance and valuable contributions.
- Advisory group members were encouraged to suggest topics or projects for discussion at future meetings, including cross sector learnings that could be shared.

Discussion

- One member of the advisory group offered to share insights from their experiences on a use case.
- It was commented that the advisory group discussions are quite broad, and it was suggested that ESO provide more information on its current position and a detailed roadmap of the use cases and the Virtual Energy System programme over the next ten to fifteen years. This would include the vision, the benefits, what it will look like, how it will piece together and what does it mean for the consumer, so the advisory group can challenge the future direction and approach.
- It was noted that the Advance Dispatch Optimiser is the centre piece of the Virtual Energy System for the ESO, and it was suggested that the advisory group would benefit from hearing more detail on this project and its future ambitions.

Recommendation

- ESO to arrange a separate meeting with the advisory group member to discuss the use case learnings.
- ESO to provide the further information mentioned above; on the roadmap and the future Virtual Energy System, particularly the Advanced Dispatch Optimiser use case.

8. AOB and next meeting

- The date and time of the next advisory group meeting were confirmed.
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