Submission to the Consultation on Developing an Electricity Storage Policy Framework for Ireland

Prepared by Codema - Dublin's Energy Agency

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Background

Codema is Dublin's Energy Agency is a not-for-profit company limited by guarantee and was founded in 1997. We are the energy agency to the four Local Authorities in Dublin, and our mission is to accelerate Dublin's low-carbon transition through innovative, local-level energy and climate change research, planning, engagement and project delivery, in order to mitigate the effects of climate change and improve the lives of citizens. We are the Dublin Local Authority's one-stop-shop for developing pathways and projects to achieve their carbon reduction and climate targets. Examples of Codema's work include energy masterplanning, district heating system analysis, energy performance contracting, management of European projects, energy saving behavioral campaigns and detailed energy reviews. Codema is well networked in Europe and has been very successful in bringing European projects to Dublin with a local implementation for the Local Authorities.

Context

Codema's Experience in Heat Sector Debarbonisaion Pathway Analysis and Spatial Energy Planning

Codema are Ireland's leading experts in the area of spatial energy master-planning. As part of our work on the Dublin Region Energy Masterplan[1] (DREM) we have assessed cost-optimal, technically feasible decarbonisation pathways for the heat, electricity and transport sectors in Dublin to 2030 and 2050. The masterplan addresses all energy sectors of electricity, heat and transport, and the interaction between these sectors from a spatial perspective as well as from a technology perspective.

The analysis is at a granular spatial level called the 'small area' level . This project also identifies and supports the use of low-carbon sources indigenous to Dublin, develops and harnesses new local level energy policy practices, and strengthens Ireland's integrated energy system modelling capabilities.

The pathways developed as part of the masterplan are based on detailed local-level, spatially driven energy scenario modelling, which has not been carried out before for any county in Ireland. This innovative local-level energy planning methodology builds upon leading international-class

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1 https://www.codema.ie/projects/local-projects/dublin-region-energy-master-plan#:~:text=The%20Dublin%20Region%20Energy%20Master,targets%20to%202030%20and%202050.

energy research in the area, and findings from the DREM have already been directly applied and demonstrated by the Dublin Local Authorities.

This work presents a set of clear, evidence-based pathways, which will enable the Dublin region to create effective, long-term energy policy in areas such as spatial planning, land-use, and public infrastructure. In addition to this the work also presents a geographic analysis of the current situation for energy use, along with additional spatial data layers to facilitate contextual analysis . The results of the DREM will allow local authorities to effectively create evidence-based policies and actions to affect CO2 emissions county-wide, by using the local authority's powers in spatial planning, land-use, planning policy and public infrastructure.

Codema's Experience in District Heating and Large-Scale Thermal Storage

Codema is Ireland's leading expert in Energy Planning, District Heating and the role Large-scale Thermal Storage in delivering a cost-effective integrated renewable energy system for Ireland. We have built the evidence-base to support the roll-out of DH in Dublin, developing the first heat demand and heat source maps in Ireland, based on European best practice methodologies. We have identified potential projects across Dublin and, working with Local Authority project champions, have **brought projects from idea to reality; from pre-feasibility, techno-economic analysis, business case through to securing funding, procurement, contracting and delivery**. We are the Dublin Local Authority's one-stop-shop for the roll-out of DH projects. Codema therefore very much welcome this opportunity to make a submission to this consultation on "Developing an Electricity Storage Policy Framework for Ireland", which has the potential to be a key initiative for providing a resilient and green electricity system for Ireland while also supporting the decarbonisation of heat which is Ireland worst performing sector in terms of renewable penetration.

Codema is a founding member of the **Irish District Energy Association (IrDEA)**, and some of our response will also be reflected in the IrDEA submission.

Response to Consultation

Codema welcomes the opportunity to make a submission on this consultation. Codema's interest in Electricity Storage (or more broadly Energy Storage) stems from our current sector integration research involving renewable electricity generators, district heating with large-scale thermal storage, and the development of cost-optimal decarbonisation pathways for heating, electricity and transport for the Dublin region. Our research and practical experience of developing projects allows us to advise on local-level low-carbon policies which aim to reduce energy, fossil fuel use and associated costs & emissions. We have more than 20 years' experience in the climate change and energy sector.

General Comments

Codema would like to highlight that it would be best for the focus of this policy framework to be expanded to include energy storage as opposed to just electricity storage to reflect the role that storage in other forms, particularly large-scale thermal energy storage (TES) serving district heating & cooling (DHC) networks, can have in supporting the electricity system. It should also be noted that these large thermal energy storage assets will require district heating & cooling networks or large industrial heat users to provide the heat demand needed to warrant their construction. For the purpose of this submission it is assumed that 2.7TWh of heat demand will be supplied by DHC networks by 2030 and 0.8TWh by 2025 in line with government targets set out in the Climate Action Plan 2023.

Responses to Consultation Questions

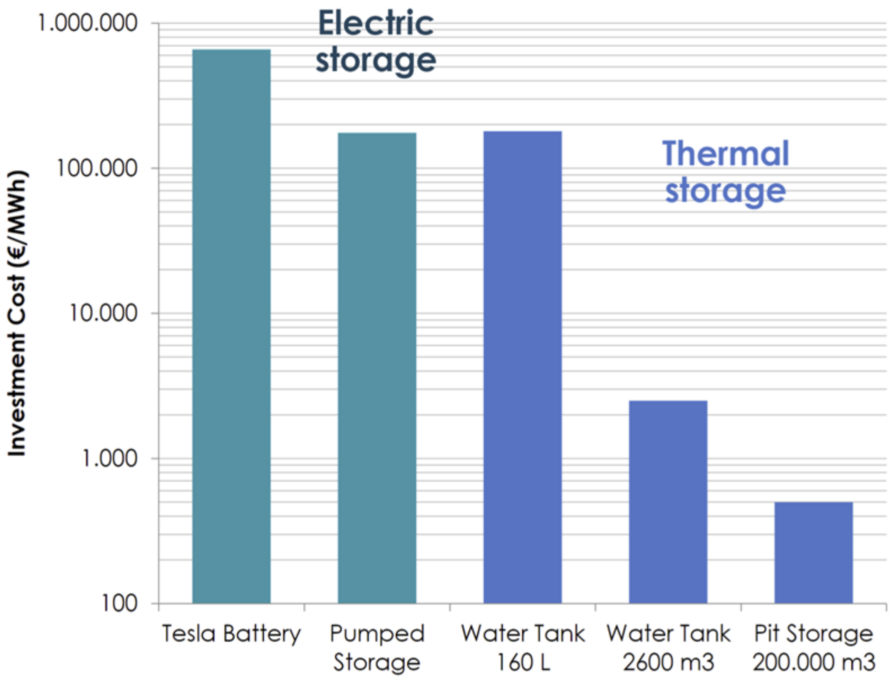
Overview of the Role of Electricity Storage in the Energy System including its Potential Benefits and Challenges

Q1. In broad terms, what future role do you see for electricity storage in the energy sector?

Firstly, it is worth noting that **the focus of this policy framework should be expanded to include energy storage as opposed to just electricity storage** to reflect the role that storage in other forms, particularly large-scale thermal energy storage serving district heating & cooling networks, can have in supporting the electricity system.

This wider focus would reflect the fact that TES, particularly large-scale TES, is the most cost-effective form of energy storage. Large-scale thermal energy storage such as that currently being deployed by district heating & cooling networks in Ireland typically have a cost that is 0.65% - 4.4% that of best-case large-scale battery storage in Ireland. Were larger seasonal thermal storage installations, common to countries such as Denmark, to be used by DHC networks in Ireland this would be even more cost efficient at 0.065% of the cost of battery storage. It is also worth noting that in many cases these large-scale thermal storage assets will already exist to allow DHC networks to utilise lower night-time electricity rates and **in this case**

the capital cost of the storage would only relate to the cost of the controls required to link its operation to signals from the electricity grid operator or market with the necessary response times.



Energy Storage Technology Cost Comparison[2]

Large-scale TES also has additional benefits when it comes to its reduced levels of degradation it experiences through the charge and discharge cycles over its lifespan when compared with battery storage.

According to analysis performed by Eirgrid[3] which informed the Climate Action Plan 2023 (CAP23), the need for storage across various durations (up to 8 hours) is estimated at 2,475MW or 10.8GWh[4] for a 'Central' scenario. It is estimated that if the **targets set out in CAP23 for District Heating & Cooling (DHC) deployment are achieved then this could provide 1300MW or 9.1GWh of low-cost large-scale thermal storage to support the electricity grid (between 53% and 84% of the storage capacity required based on the MW and GWh estimates from Eirgrid respectively) by 2030**.

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[2] https://www.en.plan.aau.dk/digitalAssets/288/288024_2016smartstorageijsepm--1-.pdf

[3] https://www.gov.ie/pdf/?file=https://assets.gov.ie/245172/2c2fd729-261b-4b64-af5e-c7f5f8d18924.pdf#page=null

[4] Using the available Eirgrid duration hours to calculate this

These large-scale thermal batteries have the ability to reduce the curtailment of renewable electricity generators by acting a dispatchable demand during low demand periods, providing frequency response to keep the grid stable as the proportion of renewable generation increases, providing flexibility in demand to reduce congestion on the network (particularly in peak winter when peak heat and electricity demand coincide), and providing a means of reducing electricity network constraints by delivering more efficient heat production and through by-passing large sections of the lower voltage electricity grid compared with individual building heat pumps for example. Codema have estimated a **71% reduction in low and medium voltage grid reinforcement costs when utilising DHC networks compared with individual building heating solutions** based from the Dublin Region Energy Masterplan[5].

Long-duration storage is typically considered any storage in excess of 10 hours. This duration of storage is routinely achieved by traditional large-scale thermal energy storage systems. In fact **thermal storage is an effective means of storing energy across a broad range of durations from seconds to seasons.**

Seasonal thermal energy storage such as Pit thermal Energy Storage (PTES) such as installations in Vojens[6] and Aalborg[7] in Denmark or Aquifer Thermal Energy Storage (ATES) such as that located in the De Bruggen and the University of Utrecht in the Netherlands[8] can provide inter-seasonal energy storage. Pit storage is also extremely cost effective at 0.065% of the cost of battery storage but requires significant land area and favourable ground conditions for its development. Aquifer thermal energy storage does not require large areas of land but does require specific sub-surface conditions i.e. an aquifer covered with a clay layer for the aquifer to be used in this way. As with most forms of thermal storage discussed in this submission (with the exception of molten salt storage) this is a one-way storage system where the electricity is converted to heat for use as heat at a later time rather than for generating electricity.

Q2. What barriers exist that might prevent electricity storage from fulfilling this role or roles?

Due to the fact that many storage technologies are typically characterised by large upfront capital costs (in the case of large-scale TES used in DHC networks the main capital cost is for the pipe network to supply heat to the buildings) it is important to have a level of certainty around potential revenue generation at an early stage in the project's development. **Clear price signals based on the grid service(s) required in a given location (balancing, ramping, frequency response, congestion management, etc.)**. This could also potentially take the form of an auction

[5] https://www.codema.ie/projects/local-projects/dublin-region-energy-master-plan
[6] https://stateofgreen.com/en/solutions/world-largest-thermal-pit-storage-in-vojens/
[7] https://www.aalborgcsp.com/business-areas/thermal-energy-storage-tes/pit-thermal-energy-storage-ptes
[8] https://www.iftechnology.com/wp-content/uploads/2018/05/Drijver-2011-High-temperature-aquifer-thermal-energy-storage-HT-ATES-water-treatment-in-practice.pdf

system (similar to the RESS scheme). The important consideration is that **the focus is on the service being provided and not the technology providing it, to help ensure that the most cost-effective solutions are used**. That being said, **it is important that non-traditional actors in the electricity market (e.g. those working in the heat sector) are made aware of these opportunities to engage in the electricity market. Therefore, raising awareness will be a key first step in this process.**

Grid connections for electrical heat production units is key to realising the potential for TES in supporting the electricity grid and achieving the level of storage required within the allotted time frame. Delays in grid connections is a significant risk factor for DHC networks which are using large-scale electrical heat production (heat pumps, electrode boilers, etc.)

Greater clarity and standardised guidance on the required IT systems and controls for electrical heating production units to provide grid services (balancing, ramping, frequency response, removing grid congestion, etc.) would be particularly useful as current actors in the heat sector would be less familiar with the standard requirements of the systems needed to engage in the electricity market. This may include equipment or controls that have and link to the grid operator that has the required response times to support the grid.

Q3. What regulatory and policy measures are needed now to ensure that electricity storage does fulfil its optimum role in the energy system?

Actions to address above

Definition of Electricity Storage and Current Technology

Q4. Do you believe there is a saturation point for battery storage, whereby adding further battery capacity provides limited benefit to the system? If so, how would you define that saturation point? Please provide evidence to support your argument.

As mentioned in question 2 the procurement of the grid services required should be carried out so that the most cost-effective solution is delivered. This approach will allow the market to arrive at the saturation point for each technology.

Q5. What technologies for electricity storage are currently in use internationally? What are their main characteristics and which ones should be considered for use in Ireland?

It is generally important to remain technology agnostic in delivering these grid services however due to the new potential actors in the market through the electrification of heat and transport it is important that the electricity sector engages with these new potential actors in the market. The role of thermal energy storage is currently underrepresented in the national conversations on storage. This is in contrast with European discourse, where thermal storage is understood to play a major role in supporting the grid through providing cost-effective energy storage (particularly large-scale thermal storage which is extremely cost-effective and is commonly used in Denmark to handle high wind power production events)

A study called Energy Storage Targets 2030 and 2050[9] carried out by the European Association for the Storage of Energy (EASE) provides a good list of both current and emerging technologies. In terms of thermal storage technologies being explored by Codema, the list is as follows:

- Large-scale tank storage
- Aquifer thermal energy storage
- Pit thermal energy storage
- Phase change material
- Thermal mass of buildings
- Aggregated domestic scale thermal energy storage
- Molten salt storage
- Sand batteries
- Existing disused structure which can hold volumes of water, particularly underground structures which use the natural insulating properties of the surround soil - e.g. old oil storage bunkers often located next to power plants

Q6. What emerging technologies for electricity storage should be considered for future use in Ireland?

Q7. What are the main characteristics of these emerging technologies?

[9] https://ease-storage.eu/publication/energy-storage-targets-2030-and-2050/#:~:text=EASE%20has%20estimated%20that%20the,deployment%20are%20not%20taken%20now.

Q.8 In terms of creating a balanced portfolio of technologies, how do you see the relationship between storage and demand-side response, alongside other flexibility measures, developing if Ireland is to meet its decarbonisation objectives?

See response to question 1

Hydrogen as a Medium for Electricity Storage

Q9. What role do you see for green hydrogen storage in helping to decarbonise the electricity sector vis-à-vis other long-duration storage technologies?

Due to its low round trip efficiency and other barriers to development (safety, potential for leaks and associated global warming potential, high cost), green hydrogen should only be used where no viable alternatives exist, the technology agnostic process of procuring grid services based on lowest cost outlined previously will highlight where better alternatives are available. In general long duration/seasonal storage becomes more important when the grid reaches 80% renewable penetration as shown in the figure from the EASE report[10] below. This 80% target is not expected to be achieved until 2030. Given these reasons it is expected that Hydrogen is unlikely to play a significant role in the short to medium term (pre 2030).

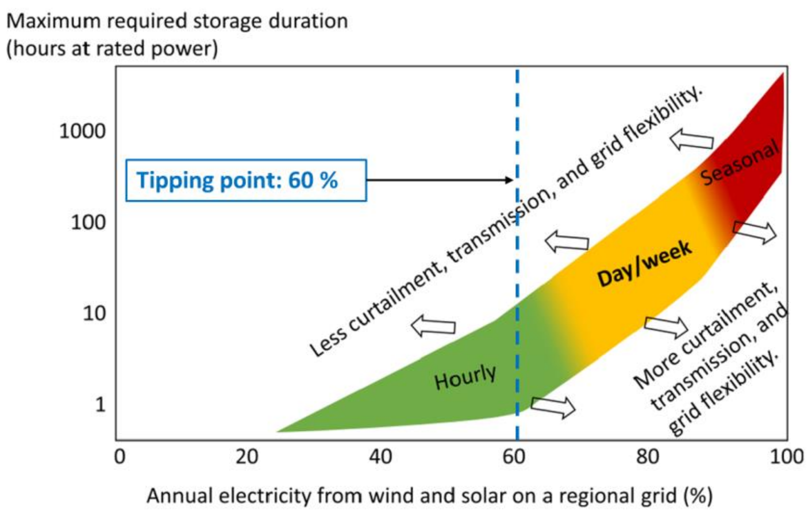

Figure 4: *Y-axis shows maximum duration of electricity storage needed to ensure demand is met at all times (logarithmic scale) versus fraction of annual energy from variable renewable generators (wind and solar) on a regional/local level. The arrows indicate either more restrictive (to the left) or aggressive (to the right) assumptions for curtailment, transmission and grid flexibility. For example in a system where curtailment is minimised (arrow to the left), storage duration required is longer than in the case where more curtailment is allowed (arrow to right). Adapted from ref [7].*

10 https://ease-storage.eu/publication/energy-storage-targets-2030-and-2050/#:~:text=EASE%20has%20estimated%20that%20the,deployment%20are%20not%20taken%20now.

Q10. How do you see the hydrogen storage industry developing in Ireland over the next ten to fifteen years and do you think green hydrogen storage is likely to dominate the long-duration storage sector as we reach 2050?

Codema are currently working on a research project looking at the potential benefits of integrating offshore wind, district heating with thermal storage and green hydrogen production in the Poolbeg area of Dublin[11]. Initial discussions around hydrogen storage in this area have focused on underground salt cavern storage off the coast of Dublin due to the space requirements needed for above ground storage. This salt cavern potential is being explored as part of a study[12] under SEAI's Research Development and Demonstration funding programme.

Thermal Storage

Q 11. What role do you see for thermal storage in terms of its ability to support the decarbonisation of the electricity/industry sector? What advantages/disadvantages does it pose vis-à-vis other storage technologies and what changes, regulatory or other, would be required? What role do you see for thermal storage as a long-term (e.g., seasonal) energy storage in Ireland?

Thermal storage can play a critical role in supporting the decarbonisation of the electricity sector. **TES, particularly large-scale TES, is the most cost-effective form of energy storage. Large-scale thermal energy storage such as that currently being deployed by district heating & cooling networks in Ireland typically have a cost that is 0.65% - 4.4% that of best-case large-scale battery storage in Ireland. Were larger seasonal thermal storage installations, common to countries such as Denmark, to be used by DHC networks in Ireland this would be even more cost efficient at 0.065% of the cost of battery storage.** It is also worth noting that in many cases these large-scale thermal storage assets will already exist to allow DHC networks to utilise lower night-time electricity rates and **in this case the capital cost of the storage would only relate to the cost of the controls required** to link its operation to signals sent from the electricity grid operator at the required response times.

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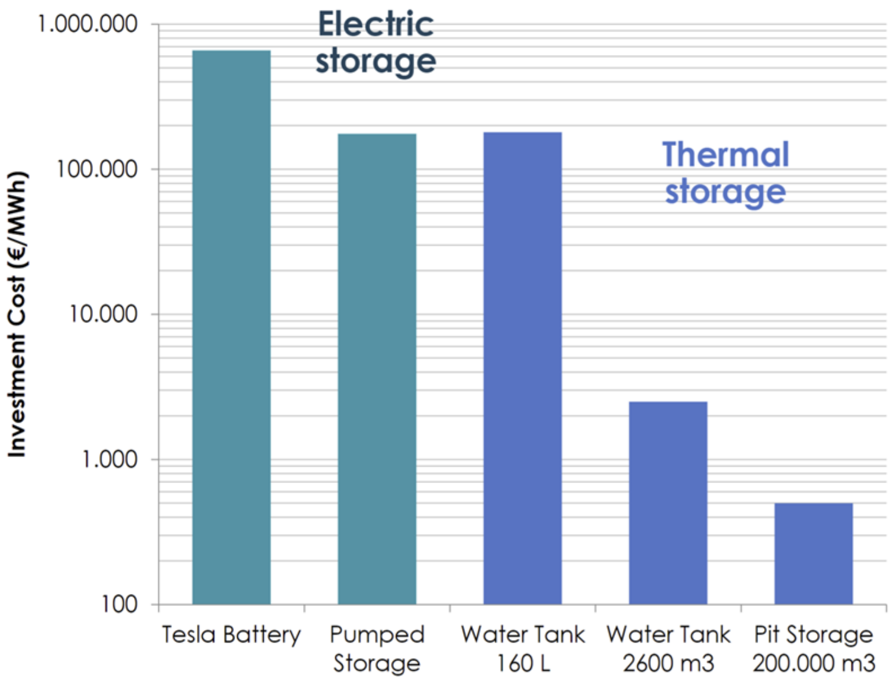
[11] https://www.codema.ie/projects/local-projects/integration-of-heat-electricity-and-transport-use-of-curtailed-renewable-en

[12] https://hyss.ie/



Energy Storage Technology Cost Comparison[13]

Large-scale TES also has additional benefits when it comes to its reduced levels of degradation it experiences through the charge and discharge cycles over its lifespan when compared with battery storage.

According to analysis performed by Eirgrid[14] which informed the Climate Action Plan 2023 (CAP23), the need for storage across various durations (up to 8 hours) is estimated at 2,475MW or 10.8GWh[15] for a 'Central' scenario. It is estimated that if the **targets set out in CAP23 for District Heating & Cooling (DHC) deployment are achieved then this could provide 1300MW or 9.1GWh of low-cost large-scale thermal storage to support the electricity grid (between 53% and 84% of the storage capacity required based on the MW and GWh estimates respectively) by 2030**.It should also be noted that these prices are based on conventional large-scale thermal storage (power-to-heat) and do not refer to high temperature thermal storage from which electricity can be generated (e.g. molten salt) which can at least in part be considered as a power-to-heat-to-power technology.

These large-scale thermal batteries have the ability to reduce the curtailment of renewable electricity generators by acting a dispatchable demand during low demand periods and boost the proportion of renewables in the grid, providing frequency response to keep the grid stable

[13] https://www.en.plan.aau.dk/digitalAssets/288/288024_2016smartstorageijsepm--1-.pdf
[14] https://www.gov.ie/pdf/?file=https://assets.gov.ie/245172/2c2fd729-261b-4b64-af5e-c7f5f8d18924.pdf#page=null
[15] Using the Eirgrid duration hours to calculate this

as the proportion of renewable generation increases, providing flexibility in demand to reduce congestion on the network (particularly in peak winter when peak heat and electricity demand coincide), and providing a means of reducing electricity network constraints by delivering more efficient heat production and through by-passing large sections of the lower voltage electricity grid compared with individual building heat pumps for example. Codema have estimated a **71% reduction in low and medium voltage grid reinforcement costs when utilising DHC networks compared with individual building heating solutions** based from the Dublin Region Energy Masterplan[16].

Long-duration storage is typically considered any storage in excess of 10 hours. This duration of storage is routinely achieved by traditional large-scale thermal energy storage systems. In fact **thermal storage is an effective means of storing energy across a broad range of durations from seconds to seasons.**

Seasonal thermal energy storage such as Pit thermal Energy Storage (PTES) such as installations in Vojens[17] and Aalborg[18] in Denmark or Aquifer Thermal Energy Storage (ATES) such as that located in the De Bruggen and the University of Utrecht in the Netherlands[19] can provide long-duration energy storage. Pit storage is also extremely cost effective at 0.065% of the cost of battery storage but requires significant land area and favourable ground conditions for its development. Aquifer thermal energy storage does not require large areas of land but does require specific sub-surface conditions i.e. an aquifer covered with a clay layer for the aquifer to be used in this way. As with most forms of thermal storage discussed in this submission (with the exception of molten salt storage) this is a one-way storage system where the electricity is converted to heat for use as heat at a later time rather than for generating electricity.

Current Role of Electricity Storage

Q. 12 Do the current arrangements for the procurement of system services provide an effective marketplace for electricity storage units to offer these services to the TSO?

There needs to be greater awareness of the services required and expected revenues available for providing these services, particularly for actors who traditionally have not been involved in the electricity market (e.g. heat suppliers/heat network operators).

[16] https://www.codema.ie/projects/local-projects/dublin-region-energy-master-plan

[17] https://stateofgreen.com/en/solutions/world-largest-thermal-pit-storage-in-vojens/

[18] https://www.aalborgcsp.com/business-areas/thermal-energy-storage-tes/pit-thermal-energy-storage-ptes

[19] https://www.iftechnology.com/wp-content/uploads/2018/05/Drijver-2011-High-temperature-aquifer-thermal-energy-storage-HT-ATES-water-treatment-in-practice.pdf

Q. 13: Do the current DS3 arrangements adequately compensate electricity storage units for the services that they offer to the grid? Are there any services which storage provides to the grid that are not currently adequately compensated?

There are currently no future DS3 arrangements set for after 2024. Greater clarity on this would help stimulate the storage market which requires greater certainty due to the up front capital required in developing these assets. If there was certain guidance in terms of typical revenues for various services that could be further developed to provide signals to the storage market including congestion management, ramping (up and down), dispatchable demand this would be very useful for stimulating investment in storage.

Q14. Do the current arrangements for the advance procurement of generation capacity services provide an effective marketplace for electricity storage units to offer these services?

Q15. Are there any changes to the current arrangements that would allow a more effective use of electricity storage to provide capacity to the electricity market?

The technology agnostic approach to providing grid services outlined in question 2 (i.e potential auction scheme or similar) which focuses on the service to be provided in a given location at a certain time rather than the technology.

Q16. Do the current and in-development arrangements for the procurement of flexibility services, including from storage, provide an effective marketplace for electricity storage units to offer these services?

Q17. Are there any changes to the current or proposed arrangements that would allow a more effective use of electricity storage to provide localised flexibility on the electricity distribution system?

Q18. Do the current RESS arrangements allow project promoters to combine renewable generation with electricity storage in a way that would contribute to the efficient and reliable production and use of renewable electricity?

Q19. Are there any changes to the current arrangements for subsidising new renewable generation projects through RESS that would allow a more effective and beneficial use of electricity storage in hybrid projects that combine renewable generation with storage?

Future Role of Electricity Storage

Q20. What electricity storage technologies exist that can provide long-duration storage to balance supply and demand in an electricity system that relies heavily on renewable power?

As outlined in previous questions Codema support a technology agnostic approach to procuring storage and other grid services. However, as thermal storage is currently underrepresented in the national conversations on providing electricity storage and other grid services, we have highlighted a number of forms of seasonal thermal storage which could be considered.

Seasonal thermal energy storage such as Pit thermal Energy Storage (PTES) such as installations in Vojens[20] and Aalborg[21] in Denmark or Aquifer Thermal Energy Storage (ATES) such as that located in the De Bruggen and the University of Utrecht in the Netherlands[22] can provide long-duration energy storage. Pit storage is also extremely cost effective at 0.065% of the cost of battery storage but requires significant land area and favourable ground conditions for its development. Aquifer thermal energy storage does not require large areas of land but does require specific sub-surface conditions i.e. an aquifer covered with a clay layer for the aquifer to be used in this way. As with most forms of thermal storage discussed in this submission (with the exception of molten salt storage) this is a one-way storage system where the electricity is converted to heat for use as heat at a later time rather than for generating electricity.

[20] https://stateofgreen.com/en/solutions/world-largest-thermal-pit-storage-in-vojens/

[21] https://www.aalborgcsp.com/business-areas/thermal-energy-storage-tes/pit-thermal-energy-storage-ptes

[22] https://www.iftechnology.com/wp-content/uploads/2018/05/Drijver-2011-High-temperature-aquifer-thermal-energy-storage-HT-ATES-water-treatment-in-practice.pdf

Q21. Do any emerging technologies have the potential to provide long-duration storage in the future?

Q22. What policy and market arrangements, if any, are needed to facilitate investment in long duration storage?

See question 2

Q23. Are there other ways in which Government can support the acceleration of long-duration storage (for examples, in terms of promoting research and development)?

Collecting subsurface data to highlight areas which could be suitable for Aquifer Thermal Energy Storage. Such data may also be useful for further government objectives such as further the development of geothermal energy[23] to provide renewable heating and greater security of supply when compared with imported fossil fuels.

Q 24. Do you agree with the barriers to long-duration storage as outlined above? Are there other barriers not included here that need to be considered? Please provide supporting evidence if possible.

Q 25. Are specific incentives or regulatory changes needed to address these barriers?

Grid Connection

Q26. How does the current network tariff structure affect the business case for storage in Ireland? What changes, if any, do you propose?

[23] Supported through the development of the 'Policy Statement on Geothermal Energy for a Circular Economy"

Q 27. Are changes needed to the way that applications for new grid connections for storage units are considered under the CRU's Enduring Connection Policy? Are there additional opportunities to connect behind-the-meter storage at generator sites or demand-customer sites that would not involve the need for additional grid construction?

Spatial Planning

Q28. What policy changes might be needed to help set standards, regulate construction and monitor operations of electricity storage units and related planning issues?

These strategic infrastructure should be supported by the various planning authorities while also considering other factors such as environmental impacts etc.

As part of energy planning (as opposed to planning consent) - space requirements, knowledge of local grid requirements

Safety

Q29. How should Government communicate and engage with the public regarding the critical role of electricity storage in supporting the energy transition, and the safety measures which are in place?

TES is a proven technology with an exemplary safety record and well embedded safety practices and as a result does not suffer from fire safety concerns in the same way that battery storage does.

Small-Scale, Grouped & Aggregated Electricity Storage

Q30. What role do you see for small-scale aggregated storage over the next ten years in supporting the decarbonisation of the electricity sector and how do you see the area developing?

Q31. What are the biggest challenges/barriers to ensuring small-scale and EV storage are deployed effectively to support the grid?

Q32. What information or resources would be required to assist prosumers to engage in demand side flexibility and services to the DSO in relation to their storage technologies?

Q33. Time of Use Tariffs and smart meters are widely available in Ireland. What other technical, market, regulatory and/ or digital arrangements need to be put into place to support prosumers to engage in demand side flexibility and services to the DSO in relation to their storage technologies?

Clear pricing signals

For further enquiries regarding this submission, please contact:

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