



CleanerGrid Competition

Extra Information Document

1st of November 2024



“Present your vision of what the growing energy sector will need to look like in 2050 to have sustainably achieved net-zero emissions”

Who we are

EirGrid are the operator and developer of Ireland’s electricity grid. The grid takes electricity from where it is generated and delivers it to the distribution network, managed by the ESB. We also supply power to industry and businesses that use large amounts of electricity.

EirGrid work to ensure there is enough electricity for society to prosper, and industry to grow. Our work is essential today, as well as being a crucial investment for future generations.

Link to our website: [Home | Eirgrid](#)

What to do

EirGrid invites you to present your vision of what the growing energy sector will need to look like by 2050 to have sustainably achieved net-zero carbon emissions. You are free to approach this from any relevant perspective. This could be from the same perspective as us, the Transmission System Operator (TSO) ([read more about the role of the TSO here](#)), or from an alternate perspective. Possible perspectives include the policy maker, environmental scientist, market operator, innovator, developer, manufacturer, end-user, or any other relevant point of view. Your vision for 2050 could include elements such as the infrastructure, energy landscape, technology, policy, economy, or end-user mindset, keeping in mind the constraint of net-zero emissions. You could also combine some or all of these elements to create a broader vision across many different areas.

Useful Links

The links below may give you some insights and knowledge that may be helpful in writing your report.

Note: you do not have to use all of these links/documents when writing your report, the aim of them is to help you and to serve as resources and documents to reference. Similarly, if you find a reputable website or publication not in the list below, feel free to reference it if it helps support your vision.

- [Net-zero by 2050 global roadmap from the International Energy Agency \(IEA\)](#)
- [An updated roadmap to net-zero emissions by 2050 from the IEA](#)
- [Shaping Our Electricity Future](#) (EirGrid’s roadmap to achieve our renewable ambition for the electricity sector)
- [Generation Capacity statement \(GCS\)](#) (EirGrid document examining the balance between electricity demand and supply in Ireland for the following 10 years)
- [The Grid](#)
- [How the Grid Works](#)
- [Transmission Map](#)
- [DS3 Programme](#) (EirGrid programme aimed at delivering a secure sustainable electricity system)
- [All-Island Ten-Year Transmission Statement](#)
- [Electricity Supply Board \(ESB\)](#) (Networks for Net-Zero Strategy)
- [European Green Deal](#)
- [Sustainable Solutions | SEAI](#) (Sustainable Energy Authority Ireland)
- [National Energy Balance | Key Publications | SEAI](#)
- [Wind Energy Ireland](#)

- [Home | Irish Solar Energy Association](#)
- [Commission for Regulation of Utilities \(CRU\)](#)
- [Climate Action Plan 2024](#)

How to submit

All documents should be submitted by email to Research@EirGrid.com.

(1) Report

Specifications

- The report should be between 10 and 20 pages, including references.
- The layout of your report can take any format you choose but must include an introduction, a conclusion and a reference section.
- The report should be submitted as a PDF document.

The judging criteria are as follows:

- a) How central is a sustainable electricity system to your vision? Have you considered net-zero by 2050 as a hard constraint?
- b) How feasible/realistic is the vision in terms of the likelihood that it could be put into place?
- c) How achievable is it that the vision could be in place by 2050?
- d) How affordable is the vision?
- e) Have you considered the impact of the vision on the electricity system in Ireland? Consider how your vision will affect the stability of the energy system and the security of supply.
- f) Have you considered how all elements of the energy system (markets, infrastructure, policy, environment, operation of the grid, etc.) will be impacted by your vision?
- g) How detailed is your approach to point f) above?
- h) How original and creative is your vision?
- i) How well are your results presented?
- j) Have you supported all evidence used in your vision?

(2) Presentation

A slide deck or video presentation (max 15 minutes) outlining your vision and key points should be submitted along with the written report to support your entry. Your slide deck should be submitted as a PDF document. If you are submitting a video presentation, please upload an unlisted video to YouTube and include a link to this in your email submission.

The slide deck or video presentation will be judged on the following:

- a) Context - how does your vision fit within the context of the energy industry?
- b) Clarity - how clear and thought out are your ideas?
- c) Credibility - have you backed up your claims?
- d) Creativity - how creative and innovative is the content of your vision?
- e) Charisma - how well are your ideas presented?

(3) Data (optional)

If you are using data to support your vision, please include references to this in your report. Feel free to include in the references section of your report any raw data, calculations or code you have used. Information on how to access data from the EirGrid SmartGrid dashboard and the SEMO website are below, along with imbedded links in the headings.

Please note that the use of data is optional and not a requirement.

Artificial Intelligence (AI) usage policy

The usage of content generated by AI in your vision (including, but not limited to text, figures, images and code) should be disclosed in a separate section of the submission. The AI service should be identified (*ChatGPT, LaMDA, etc.*) and specific sections of the vision that use this content should be identified and accompanied by an explanation regarding the manner in which the AI system was utilised to generate the content in question.

We strongly discourage the use of AI services for primary research and information gathering in your vision, as false information (*hallucinations*) is still commonplace in AI generated content. In cases where you do use these services for research, we recommend that all sources are checked and verified.

EirGrid Public Databases:

Smart Grid Dashboard

EirGrid uses the dashboard to publish key operational data across 7 key categories:

- System demand → How demand is predicted, to ensure production levels meet electricity consumption.
- System generation → Data about the total energy production on the system.
- Wind generation → An estimate of the total electrical output of all wind farms on the system. There is data for actual wind output and for forecast wind output (note actual can be less than forecast due to forecasting error and/or dispatch down of wind).
- Interconnection → This data represents the estimated current net electricity transfer in MW on the East West and Moyle Interconnectors.
- Imbalance Price/Volume → This data shows the time weighted average Imbalance Price and Net Imbalance Volume for each 30-minute Trading Period.
- Frequency → This data shows the frequency over 5 second intervals. When supply and demand are in balance, the frequency will be 50Hz.
- CO₂ → This data shows the average CO₂ emissions per unit of electricity generation output at 15-minute intervals.

The dashboard allows users to:

- Switch between all island, Ireland, and Northern Ireland power system data
- Customise graphs by date
- Compare and download data to the filetype “.csv”.

The Smart Grid Dashboard contains an API which can be used to obtain the data. For example, to access the API from Chrome:

- Go to the webpage that contains the data you would like to extract
- Right click and press ‘Inspect’ for Developer Tools in Chrome
- Select the “Network Column”

- Refresh the page - the API call will then display
- Select the API calls starting with the phrase “data” and open them into a new tab.
- The data will appear in JSON format and look like:
 - `{"ErrorMessage": null, "LastUpdated": "29-Aug-2023 14:52:16", "Rows": 1 [{"EffectiveTime": "29-Aug-2023 00:00:00","FieldName": "SYSTEM DEMAND", "Region": "ALL", "value": 3672}, {"EffectiveTime": "29-Aug-2023 00:15:00", "FieldName": "SYSTEM DEMAND"00:30:00", "FieldName": "SYSTEM DEMAND""Region":"ALL""Region":"ALL""value": 3634} , {"EffectiveTime": "29-Aug-2023`
- Extract or copy and paste the data into the format that you see fit and use it accordingly.

[SEMO website](#)

The market data on the SEMO website can be viewed as:

- Static Reports - these allow you to access libraries of flat file outputs.
- Dynamic Reports - these allow you to view market data in online charts and permits you to download the data.

Examples of the datasets which are available on the SEMO website include:

- Forecast demand
- Forecast renewable (wind and solar) production
- Forecast renewable dispatch down (due to excess wind and solar)
- Scheduled interconnector flows
- Forecast market price on a 30 min basis
- Forecast output on a per unit basis.