

# Submission template

## Consultation on Energy Demand and Generation Scenarios (EDGS) 2023

This is the submission template for responding to the consultation document on the Energy Demand and Generation Scenarios (EDGS) 2023. The Ministry of Business, Innovation and Employment (MBIE) seeks your comments by **5pm on Monday, 22 May 2023**.

Please make your submission as follows:

Fill out your details under the **Contact details** section and, if applicable, check the boxes underneath on privacy and confidentiality.

Fill out your responses to the discussion document questions in the section: **Responses to questions**. Your submission may respond to any or all of the questions. Where possible, please include evidence to support your views, for example references to independent research, facts and figures, or relevant examples. If you would like to make other comments not covered by the questions, please provide these in the **Additional feedback** section.

Before sending your submission:

- a. delete this first page of instructions; and
- b. if your submission contains any confidential information, please:
  - State this in the cover page or in the e-mail accompanying your submission, and set out clearly which parts you consider should be withheld and the grounds under the Official Information Act 1982 (OIA) that you believe apply. MBIE will take such objections into account and will consult with submitters when responding to requests under the OIA.
  - Indicate this on the front of your submission (e.g. the first page header may state “In Confidence”). Any confidential information should be clearly marked within the text of your submission (preferably as Microsoft Word comments).

Submit your submission by emailing this template as a Microsoft Word document to [energyinfo@mbie.govt.nz](mailto:energyinfo@mbie.govt.nz) with **EDGS 2023** in the subject line by **5pm on Monday, 22 May 2023**

Please direct any questions that you have in relation to the submissions process to [energyinfo@mbie.govt.nz](mailto:energyinfo@mbie.govt.nz).

### Release of Information

Please note that submissions are subject to the OIA and may, therefore, be released in part or full. The Privacy Act 2020 also applies. MBIE intends to publish a compiled list of next steps on our website at [www.mbie.govt.nz](http://www.mbie.govt.nz). Should you agree to having quotes from your submission included in the next steps, we will ensure that all parts of your submission included does not refer to any names of individuals.

# Submission on the Energy Demand and Generation Scenarios (EDGS) 2023

## Contact details

Name	Privacy of natural persons
Organisation (if applicable)	BlueFloat Energy & Elemental Group
Contact email address	Privacy of natural persons

## Privacy statement

We collect your personal information (name and email address), in order to identify stakeholders and contact you (if you agree). Providing some information (such as your organisation) is optional, however if you do not provide this information, we may not be able to link your response to the organisation you are representing. We advise caution on the use of free-text boxes, please do not provide more personal information than is required for the purposes of this consultation.

Besides our staff, we may share this information in line with the Privacy Act 2020 or as otherwise required or permitted by law. We keep your information safe by storing your data in folders with limited access. If this information is shared or published, we may need to edit comments to remove personal information.

This information will be held by MBIE. You have a right to ask for a copy of any personal information we hold about you as a result of this consultation, and to ask for it to be corrected if you think it is wrong. If you'd like to ask for a copy of your information, or to have it corrected, please contact us at [energyinfo@mbie.govt.nz](mailto:energyinfo@mbie.govt.nz).

## Release of information

Please let us know if you would like any part of your submission to be kept confidential.

- I agree to be contacted by MBIE about any points I have raised or obtain more information about the content of my submission.
- I agree to having quotes from my submission included in the compiled list of next steps.
- I would like to be contacted before the release or use of my submission in the compiled list of next steps that will be published by MBIE after the consultation.
- I would like my submission (or identified parts of my submission) to be kept confidential, and **have stated below** my reasons and grounds under the Official Information Act that I believe apply, for consideration by MBIE.

I would like my submission (or identified parts of my submission) to be kept confidential because... <a href="#">[Insert text]</a>
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[To check the boxes above: Double click on box, then select 'checked']

# Responses to questions

Instructions for completing this submission template:

- Check relevant box by double clicking on the box, then select 'checked'
- Some questions have sub-parts
- Add any additional comments
- Respond to any or all questions as relevant

## Introduction

1 a) Do you agree with the stated purpose of EDGS? (Please select one)

Yes

b) Why, or why not?

2 How do you use EDGS?

BlueFloat Energy (BFE) is a leading offshore wind developer with a global pipeline of offshore projects. In New Zealand, BFE has partnered with Elemental Group (EGL) to develop an offshore wind industry locally and we have announced two projects to date (South Taranaki Offshore Wind and Waikato Offshore Wind). The supply and demand forecasts set out in EDGS helps to support decision making about how we progress our pipeline of development options.

3 a) Do you agree with the frequency of the EDGS? (Please select one)

No (please elaborate below)

b) If NO, how frequently do you think it should be?

Annually  Every two years  Every three years  Other (please specify)

We believe that the current frequency is too long. The market is experiencing a period of significant societal, technical and regulatory change and a 4-year review period is too infrequent to ensure that the demand and growth scenarios are captured accurately.

## Scenarios

4 Does the set of four scenarios adequately explore the potential future states that you think will be important? (Please select one)

Yes  No  Don't know

5 a) Is each scenario's story internally consistent and coherent? (Please select one)

Yes  No  Don't know

b) If NO, why not?

- We note that the Environmental scenario, which considered more ambitious government response to climate change, has been removed. We do not agree with this proposal. Although the Government has introduced new policy, additional, potentially more ambitious policy, could be introduced in the period to 2050.

- The difference in scenarios is only based on economic or technological factors. We believe that there needs to be some consideration of changing public attitudes, which could drive decarbonisation activities faster, regardless of economic conditions or technological advancement.
- In the Innovation and Constraint cases, natural gas availability should be lower, reflecting a lower appetite to invest in new fossil fuel production, due to ongoing government policy and as technology supports broader electrification and/or is displaced by green hydrogen and other renewable fuel types.

6 a) Are there other aspects that should be considered in our scenario planning? (Please select one)

Yes                       No                       Don't know

b) If YES, please write here:

- See above comments

### Key assumptions

7 Do these assumptions align with the four scenario definitions? (Please select one)

Yes                       No                       Don't know

8 a) Do you agree with these assumptions? (Please select one)

Yes                       No                       Don't know

b) If NO, please explain or add any specific changes to the table provided below.

If you wish to provide alternative assumptions from those we have identified, please fill out the cells in the table below.

	Variable	Reference	Growth	Constraint	Innovation
<b>General</b>	Carbon price (NZD / t CO <sub>2</sub> -e)				
	Crude oil price (USD / barrel)				
	Exchange rate (NZD/USD)				
	Real discount rate				
	GDP				
	Population				
<b>Electricity generation</b>	Gas availability for electricity generation <sup>1</sup>				
	Cost of wind generation				

<sup>1</sup> This is how much natural gas is available for electricity generation, not actual levels of usage

	Cost of grid solar generation				
Technology uptake	Residential solar PV				
	Electric vehicles				
Electricity demand	Peak demand				
	Demand-side response				
Energy demand	Energy efficiency improvements				

9 a) Do you agree with these process heat assumptions? (Please select one)

Yes       No       Don't know

b) If NO, why not?

- We agree with the general principals applied for process heat assumptions, however, we recommend that all scenarios should reflect the fact that high process heat can move away from fossil fuels within the timeframe of the forecast. Biomass, hydrogen and electricity are all proven technologies that exist today which can transition high process heat away from the use of fossil fuels. The speed at which the move occurs and the degree to which fossil fuel is displaced will vary for each scenario, for example:
  - Reference: A modest pace of change that reflects current government policy.
  - Growth: A modest pace of change that reflects current government policy.
  - Constraint: A slow pace of change that falls behind current government policy.
  - Innovation: A rapid pace of change and one that exceeds current government policy.

10 What mix of electricity and biomass should we be assuming for process heat fuel-switching in each of our scenarios? Please fill out the table supplied below.

Fuel type	Reference	Growth	Constraint	Innovation
Electricity	80%	80%	70%	90%
Biomass	20%	20%	30%	10%

11 What do you think we should be assuming for the **future activity** of large energy users involved in specific industry process heat applications in each of our scenarios?

- Large energy users are attracted to New Zealand's highly renewable energy system and stable political environment. These qualities are expected to persist into the future and thus EDGS should assume that New Zealand remains an attractive market for ongoing investment, with large energy users continuing operations into the future. Government policy is committed to ensuring decarbonisation without deindustrialisation and the announcement on 21 May 2023 regarding investment to electrify NZ Steel is evidence of this.

- We note the recent entrant of a new category of large energy user, being the data centre market, which is on-track to become a very significant electricity user in the near to medium to term.
- In the Reference and Growth scenarios, large users should be modelled to remain, with growth rates reflecting economic growth forecasts used for the scenario. These large users should be assumed to transition their existing fossil fuel use to renewable alternatives through electrification or power-to-x alternatives.
- In the Constraint scenario, large energy users will largely continue operations but there will be an overall contraction of output reflecting the scenario's growth model. There will be a limited conversion, by large users, to renewable fuel and/or feedstock in this scenario.
- In the Innovation scenario, the activity levels of large users will increase significantly, above the national growth rate, reflecting the fact that these industries will take advantage of NZ's highly renewable energy system, making products globally attractive due to sustainability attributes. This scenario should assume high adoption rates of electrification or power-to-x fuel substitutes given technological advancement.

12 What do you think we should be assuming for the **closure** of large energy users involved in specific industry process heat applications in each of our scenarios?

- In the Reference and Growth scenarios there will be no closure of large energy users.
- In the Constraints scenario we propose that a small proportion of large energy users close by 2035.
- In the Innovation scenario we propose that all large users also remain open and potentially expand, alongside increased advanced manufacturing and technology exports.

13 a) Do you agree with our approach to the possible closure of Tiwai Point? (Please select one)

Yes                       No                       Don't know

b) If NO, why not?

## Generation stack

14 What timeline do you believe we should use for the **refurbishment** of existing plants?

We have no input to provide on this

15 What timeline do you believe we should use for the **retirement** of existing plants?

We have no input to provide on this

16 a) Do you feel your views on the refurbishment or retirement of plants would be affected by scenario? (Please select one)

Yes                       No                       Don't know

b) If YES, please provide details.

17 If you know of any additional plants that need to be considered, please provide information below.

18 a) Do you agree with our definition of potential plants? (Please select one)

Yes  No  Don't know

b) If NO, why not?

See commentary in question 19 below

19 a) Do you agree with what we have presented in Table 4 in Appendix A of the Consultation document around generic plants? (Please select one)

No

b) If you have amendments or additional information, please provide details below.

- Generic OCGT and diesel peaker – we propose that it is unlikely that there will be any future investment into hydrocarbon based peaker plants.
- Generic Offshore Wind – The proposed capacity does not reflect the likely base case for offshore wind. The minimum capacity size of 50MW is unrealistic as this output is far too small to support an economically viable offshore wind project. We are unaware of any developer pursuing a project of this size, with announced projects to date falling in the range of 500-1,000MW. We recommend that this is adopted for generic offshore wind plants. Further, we recommend that the following three projects are recognized as Proposed as firm plans have been announced for each of these projects and their proponents are undertaking the development activities required for the lodgment of a consent application:
  - BFE & EGL – South Taranaki 900MW
  - BFE & EGL – Waikato 1,000MW
  - Taranaki Offshore Partnership – South Taranaki 1,000MW

20 a) Given the information presented in the Generation stack section and Appendix A of the Consultation document, are there any other generation types that we are missing from our generation stack? (Please select one)

Yes

b) If YES, please specify.

We note that a number of grid scale batteries are now under development or construction in New Zealand. Although a form of storage rather than pure generation, they will play an equivalent role to other peaker plants in meeting peak electricity demand and thus should be considered in the stack.

## Views on new and emerging technologies

21 How do you envision the cost for new technologies changing in coming years?

Predictions of cost are highly uncertain. However, we believe that it is highly likely that the cost of new technologies will reduce as uptake improves and manufacturing innovation improves, and economies of scale take effect.

In relation to offshore wind, costs have fallen significantly in recent years as supply chains have matured and as turbine sizes have grown. Whilst 15MW turbines are currently being deployed on new projects, the next generation of larger turbines have already been

announced by OEMs. Increasing turbine sizes leads to significant economies of scale and thus we expect costs to continue to fall into the future.

22 What do you think the uptake will be like for these new technologies?

Predictions of uptake are also highly uncertain. However, we believe that it is highly likely that the uptake of new technologies will increase as these technologies become more mainstream, as costs reduce and as supporting infrastructure is put in place, and as consumers and citizens continue to demand green energy

23 How do you believe New Zealand's green hydrogen industry will develop between now and 2050? What role will hydrogen taken in our electricity system in this time?

We expect that the use of green hydrogen will initially be constrained to industrial transportation, the transition of some process heat and blended into the gas distribution system. In the longer term, we believe there is a strong case that industry will leverage New Zealand's highly renewable electricity market to deploy green hydrogen in a wider variety of applications. For example, we note the potential for domestically produced ammonia, sustainable aviation fuel and marine shipping fuels based on green hydrogen derivatives. Such activity would support decarbonization whilst significantly increasing New Zealand's energy sovereignty and economic resilience.

We also note the significant role that electrolyzers could play in providing demand side response in the New Zealand electricity system. We believe that this feature will support the uptake of green hydrogen by industrial users due to the value created by this flexibility.

We do not expect hydrogen to become a fuel stock for baseload power generation, but we note it's strong potential to be stored long-term and burned in peaking plants.

## Next steps

24 Which of the below products would you find MOST beneficial? Please rank them from 1 (most beneficial) to 4 (least beneficial).

4 **Electricity Generation Investment Opportunities Report**

3 **Energy Outlook**

2 **Generation Stack Report**

1 **Levelised Cost of Electricity Generation (LCOE)**

[To edit the rankings above: right click on the field "1, 2, 3 or 4", then select 'Update Field']

## Additional feedback

25 Do you have any additional feedback that you would like to provide on the EDGS or the options we have proposed? If yes, please provide below.

- The 4 scenarios presented in the 2023 consultation document focus on factors based on the levelized cost of energy, with limited consideration for other, more nuanced, issues such as diversification (for risk mitigation), social licence and stakeholder influences. We suggest that there needs to be some consideration of these issues in the scenarios also as it is highly unlikely that Government policy will simply facilitate the lowest cost solution, ignoring all other factors, to prevail in all cases.
- Previous versions of the EDGS have mostly considered onshore wind capacity and availability factors in respect of grid contribution. Offshore wind has much higher capacity factors than onshore wind and should be considered separately when modelling



the contribution to future generation due to the efficiencies in utilisation of transmission infrastructure and the more consistent generation profile for integration into the broader energy system. Offshore wind's generation profile is particularly well suited for supply to new green hydrogen electrolyzers.

- The significantly better capacity factors for offshore wind would allow the retirement of more fossil fuel generated electricity to occur more rapidly than has been modelled in previous versions of the EDGS.
- Previous versions of the EDGS have also concentrated mostly on the long-run marginal costs (LMRC) associated with onshore wind. From the consultation paper, it appears that the intention is to categorise all wind together, with assumed costs applied at project level. For the reasons above, we recommend that factors beyond pure cost are taken into account to ensure that generation is deployed in the forecast based on a range of factors including generation profile, impact on transmission infrastructure, competing land use, consenting risk and to achieve diversification of generation sources.
- The EDGS analysis has significant bearing on investment planning, for a wide range of organisations across NZ and the scenarios presented are of particular importance. We suggest that there should be wider and greater engagement in and consultation on the development of these scenarios, to ensure understanding and agreement, prior to the EDGS submission process.

Thank you for completing this submission template, we appreciate you taking the time. We will use your feedback to inform our modelling for EDGS 2023 and will refine the draft assumptions based on feedback received through consultation.