

# Submission to the AEMO 2024 Draft ISP

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**REDACTED VERSION**

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## ***EXECUTIVE SUMMARY***

To further enhance the design of Australia's future energy system, the 2024 Draft ISP could benefit from assessing recent technological advances that enable greater utilisation of existing network infrastructure.

We note that the Commonwealth and New South Wales Governments are already reviewing a detailed proposal to accelerate their respective energy transition objectives by utilising advanced software analytics to streamline the connection of clean energy projects to existing network infrastructure.

A consortium of industry leaders, including **Neara**, [REDACTED] (the **Consortium**) have already proposed to conduct two pieces of analysis (the **Project**) to deliver to government stakeholders (and other critical stakeholders such as AEMO) a time and cost-efficient solution that will enable significantly more renewable energy to be connected to the existing grid at gigawatt scale:

- A network, land-use and generation map to identify where renewable generation siting can be optimised across the existing network, considering various parameters related to hosting capacity, consumer load, infrastructure, technical feasibility, social licence, and environment (**Network Map**).
- A recommendations paper, focusing on commercial and regulatory constraints that impact the speed and success of the renewable energy buildout (**Recommendations Paper**).

Neara's engineering grade, 3D digital modelling technology has already been adopted by the private sector, specifically electricity network service providers (**NSPs**), to i) help identify and unlock capacity in existing networks, and ii) efficiently surface a broad spectrum of network and renewable generation configurations through multiple lenses and drawing from an array of varied data sources. Neara's platform produces an engineering-grade, 3D digital model of utility networks, which is used for complex modelling and analysis. Every Distributed Network Service Provider (**DNSP**) in NSW has adopted Neara's platform, resulting in Neara digitally modelling ~99% of the state's overhead distribution electricity network. This digital model is continuously expanding into other areas of the NEM as well with the involvement of NSPs across the Australian states.

The **Consortium** has proposed a pilot version of the **Network Map** to validate its functionality in [REDACTED] network area, aiming to expand it across NSW and then across the entire NEM. This expanded Network Map will assist Federal and State governments to prioritise efficient strategies for integrating renewable generation. The **Recommendations Paper** will address regulatory and commercial constraints to maximise the benefits of the Network Map. [REDACTED]

To its credit, AEMO has previously acknowledged that *future ISPs will continue to respond to material changes in technologies, costs and policies*. The **Project** is undoubtedly one of these material changes. AEMO has the opportunity to be an observer and potential participant in the **Project**, and so it would be prudent to contemplate how the success of this pilot will impact the 2024 ISP and future ISPs, in particular in relation to planned transmission projects and Optimal Development Path (**ODP**).

This submission is focused on the following three questions (out of the five posed in the 2024 Draft ISP), and presents several further considerations for AEMO's review:

1. Does the proposed optimal development path help to deliver reliable, secure and affordable electricity through the NEM, and reduce Australia's greenhouse gas emissions?
2. Does the proposed timing and treatment of actionable projects support a reliable, secure and affordable NEM?
4. Do you have advice about how social licence can be further considered in the ISP, or advice on how to quantify the potential impact of social licence through social licence sensitivity analysis?

Consultation Questions 3 and 5 were not seen as relevant to this particular submission and were omitted. **Neara** would welcome any requests for further details, or collaboration with AEMO on any of the information in this submission. The full copy of the **Project's** initial submitted proposal is contained at the end of this submission.

## Submission Questions

### Question 1

***Does the proposed optimal development path help to deliver reliable, secure and affordable electricity through the NEM, and reduce Australia’s greenhouse gas emissions? If yes, what gives you that confidence? If not, what should be considered further, and why?***

While the ODP highlighted in the 2024 Draft ISP is considered, structured and accurate given its inputs, the influence of the **Project** (as highlighted in this submission) would cause significant improvements in the reliability, security and affordability of the NEM’s energy transition, as well as further reduce Australia’s greenhouse gas emissions at an expedited pace. This would be achieved through the **Project’s** ability to unlock underutilised network capacity, mitigating the significant network availability constraints the market currently experiences, enabling a more rapid transition to renewable energy sources in the NEM. Due to this potential, **Neara** recommends AEMO consider an enhanced ODP, one that prioritises the potential for leveraging existing network infrastructure alongside new transmission infrastructure. A combined and diversified approach will be required to accelerate the reliable and secure transition to renewable generation.

The **Project** will provide a platform to support network planning and generation siting, permitting and social engagement, developed and maintained by the **Consortium**. The **Project** will enable the creation of a NSW-wide network and generation hosting map with the potential to expand NEM-wide. It would accurately identify and address reasons for the gap between latent and available hosting capacity, and the speed of renewable energy deployment experienced to date. Through unlocking latent existing capacity in the network, there is an opportunity to minimise the cost, time, and social impacts related to the construction of new network infrastructure, which in turn will accelerate the speed of the renewable buildout. The **Network Map** will also streamline and refine how site selection and connection processes for renewable generation are performed, with the ability to look at “all sites” in detail and simultaneously - in place of the traditional approach of looking at each potential site individually. This will result in increased efficiency in decision making and capital allocation through detailed comparisons and AI-assisted analysis. By focusing on the locations with the highest potential and fewest constraints, development spend can be staged and optimised.

The **Project** will identify optimal locations for existing network capacity utilisation to enable new renewable generation within the existing distribution network across multiple voltages and renewables profiles to validate centralised and distributed generation opportunities. [REDACTED]

While always a priority for AEMO, the pressing need for cost reduction to ease the cost of living crisis being experienced by Australians is now paramount. The **Project** can provide meaningful cost savings across the ISP, which can be passed on to consumers. This will be achieved by safely and efficiently reducing the need for new transmission infrastructure to enable the energy transition, reducing significant spend on material and labour costs, and by also increasing the supply of renewable energy available on the network - enabling lower energy prices to be passed on to Australian consumers. The **Project** would not only reduce consumer costs significantly, but also reduce pressure and delays from labour and supply shortages, reduce social licence concerns with less infrastructure encroachment on natural and heritage landscapes, and also reduce the total time taken for renewables to connect to the network and assist with enabling Australia to meet the committed political timelines for renewables and net zero.

AEMO states that “Renewable Energy connected with transmission, firmed with storage and backed up by gas-powered generation is the lowest cost way to supply electricity to homes and businesses throughout Australia’s transition to a net-zero economy.” The **Project** not only aligns with AEMO’s conclusion, but further enables AEMO’s vision by reducing timelines and costs to an even greater extent. Hence, the **Project** should be a key consideration in the ODP for the NEM, as to use AEMO’s phrasing, “the sooner firmed renewables are connected, the more secure the energy transition will be”.

## Question 2

***Does the proposed timing and treatment of actionable projects support a reliable, secure and affordable NEM? If yes, what gives you that confidence? If not, what should be considered further, and why?***

The **Project** addresses the current pressures on the energy transition by enabling the rapid connection of renewable generation through increased available network capacity and reduced need for extensive infrastructure builds or upgrades.

**Neara** recognises that AEMO considered and discarded the option of generation development with no additional transmission at all, along with many other alternatives, in its prior review of potential development paths. **Neara** also respectfully notes that the **Project** proposal was not in the market at the time of AEMO’s 2024 Draft ISP review. **Neara** is not suggesting that this review was incorrect, nor is it suggesting that transmission infrastructure builds are not inherently necessary to enable the energy transition. However, modelling by distribution networks has already demonstrated that the cost per MW of introducing new renewable generation is 6 - 25x higher through new transmission versus existing network utilisation, a cost that is ultimately passed through to consumers. In light of this, and the fact that coal owners are only required to provide 3.5 years notice of a plant closure, the ability to rapidly integrate replacement capacity from renewable sources with minimal infrastructure investment must be a key strategy for enabling the energy transition.

AEMO highlighted in the 2024 Draft ISP that recent QLD transmission projects were completed at a higher voltage capacity than originally estimated, resulting in a significant reduction in overall capacity and transmission build out requirements. The **Project** could replicate this kind of reduction of transmission requirements at scale, since the Neara platform has recently unlocked up to double the original capacity across 1.4 million distribution assets on Essential Energy's network in NSW using AI-based analysis at scale.

AEMO stated in its 2024 Draft ISP that transmission planners make the most of the existing network before considering new projects, and that plans for the network take advantage of the NEM's geographic diversity, allow REZs to transfer their future energy to where it is needed, and maintain a secure and reliable power system. The **Project** does not compete with, nor invalidate these statements, but rather would be a critical additional input to AEMO's analysis in this area upon its successful completion - especially in regards to the long term projects required to meet the 2050 targets. As was discussed in the 2024 Draft ISP and the 2024 ISP publication webinar at length, the current array of proposals and projects will not meet these long term net zero and renewable energy targets without significant further investment and contributions. It is **Neara's** belief that the **Project** will support and de-risk the NEM's long term ability to meet these targets with optimised budget allocation and expenditure.

Any opportunity to reduce the construction of new transmission infrastructure via the successful scaling of the **Project** should align with the goals of AEMO and the wider Australian public. AEMO predicted that transmission project costs will continue to increase beyond the rate of inflation as the sector adapts to market pressures and environmental and land costs, hence a reduction in the total number of projects should relieve significant cost pressures from the energy transition. This reduction in build out should also further increase the predicted \$17B savings to the Australian public that AEMO has forecasted from the current transmission build out modelling. The alignment of AEMO goals and the **Consortium's**, along with the benefits of integrating the **Project's** inputs into future ISP's upon its successful delivery, are clear and continuous.

#### **Question 4 (Question 3 & 5 omitted)**

**Do you have advice about how social licence can be further considered in the ISP, or advice on how to quantify the potential impact of social licence through social licence sensitivity analysis?**

The 2024 Draft ISP references how critical it is for project managers to foster trust in the local communities. Managing this and the general access to social licence in the ISP is critical in enabling transmission and generation build-out to go ahead, and renewable energy targets to be met on time. **Neara** has demonstrated that social licence for planned network projects can be further considered and accessed via the outputs of the **Project** - which will enable AEMO and transmission NWOs to model, visually communicate, and easily share alternative options for new builds.

The **Project** will support the consideration of, and response to the voices and concerns of local communities - providing the ability to showcase options, run simultaneous analysis against different risk appetites and requirements, and the ability to enable the NSPs or project managers to model suggested changes. This could even be done live to stakeholders during existing community meetings, helping to communicate and mitigate issues from inbound suggestions.

The **Project** will optimise existing infrastructure, and thus can avoid some (but not all) new builds, which consequently reduces social licence issues in the areas where new builds have been avoided. **Neara's** new transmission modelling solution, which is an extension beyond the parameters of the initial **Project**, is currently being utilised by Transgrid for this purpose. **Neara** believes that the **Project**, and these transmission digital models, can enhance transparency and allow helpful and genuine consultation to take place with landowners and other local stakeholders.

## ***THE PROJECT INFORMATION***

The full parameters and details of the **Project** were contained below, but have been removed from this shareable edition.