



AEMC rule change ERC0396: Improving consideration of demand- side factors in the ISP

EEC Submission

July 2024



18 July 2024

Mr Ashwin Raj

Australian Energy Market Commission
Level 15, 60 Castlereagh Street
Sydney NSW 2000

Dear Mr Raj,

Re: ERC0396 Improving consideration of demand-side factors in the ISP

The Energy Efficiency Council (EEC) welcomes the opportunity to comment on the proposed rule change to improve the way AEMO considers demand-side factors in the Integrated System Plan (ISP).

The EEC is Australia's peak body for energy management, electrification, and decarbonisation with a membership of businesses, universities and governments working to guide Australia on the path to an efficient, prosperous net zero economy.

The EEC strongly supports a rule change to improve the way the demand side is considered in the ISP. The ISP is an influential document that guides decision-making by energy-sector investors and policymakers. Without proper consideration of the demand-side, the ISP risks presenting a set of possible scenarios that do not represent the most realistic least-cost pathway for developing the National Electricity Market.

While the proposed rule is a positive step in the right direction, the EEC suggests the following:

- **Explicitly require AEMO to expand the ODP to co-optimize between investments in supply-side and demand-side resources.** Demand-side resources should comprise everything under the project proponent's definition of CER and distributed resources, and in addition, energy efficiency- for example, improvements to buildings' thermal performance.
- Require AEMO to develop a **Demand-side Statement of Opportunities (DSOO)** (See Appendix A)¹ annually, commencing immediately. A DSOO would provide a detailed overview of the demand-side resources available and would fill a gap while the modelling framework is updated to allow for co-optimisation across both supply and demand-side resources.
- To inform the DSOO and the ISP, AEMO should commission expanded "**bottom-up**" **modelling of a range of demand side resources** focussed on demand-side technologies, including energy efficient technologies. In particular, this work should seek to generate investment costs for demand-side technologies that allows for better comparability between supply- and demand-side resources.

¹ The current proposal is to amend clause 5.22.6 to explicitly include 'a statement on how CER and distributed resources uptake and orchestration are anticipated to develop, linking to assumed policies and market structures'. The DSOO proposed in this submission may require amendments to clause 3.13.3A of the Energy Rules.

Noting that expanding the ODP modelling to co-optimize between supply and demand will be a longer-term project, the EEC recommends commencing with improving bottom-up modelling and developing the DSOO as a concrete first step.

The EEC would welcome the opportunity to discuss these matters in more detail.

Kind regards,

A handwritten signature in black ink, appearing to read 'Jeremy Sung', with a stylized flourish at the end.

Jeremy Sung

Head of Policy, EEC

Answers to specific questions

Question 6: Should AEMO be required to expand consideration of CER and distributed resources in the ISP?

(a) Should the ISP's analysis include greater consideration of the assumptions and contingent factors underpinning the expected development of CER and distributed resources? Why or why not?

(b) Do you agree that AEMO is currently constrained in its ability to access relevant information about distribution network hosting capacity and relevant CER forecasts from DNSPs?

AEMO should be required to expand consideration of CER and distributed resources in the ISP. The proponent defines these resources as follows:

- Consumer Energy Resources (CER): resources installed by consumers that generate or store electricity or that can alter demand in response to external signals including rooftop solar, batteries, electric vehicles and chargers, and controlled loads such as water heaters and air conditioners.
- Distributed resources: generation and storage assets that are installed within the distribution network (i.e. in front of the meter), such as community batteries.

In addition to the resources identified above, as part of its consideration of CER, AEMO should be required to consider **energy efficiency resources that permanently and reliably reduce demand, especially during periods that are valuable for the system**. These resources would include, for example:

- Upgrades to the thermal performance of buildings, which can be particularly valuable during periods in which renewable generation and customer load is misaligned (i.e. between 6 and 9PM).
- Upgrades to energy efficient appliances and equipment used in homes, commercial buildings and industrial facilities.

For other ideas as to what should be considered, see our proposal for a Demand-side Statement of Opportunities (Appendix A).

In answer to question 6(a), the EEC agrees that the ISP's analysis should include greater consideration of the assumptions and contingent factors underpinning the expected development of CER and distributed resources because there are significant uncertainties associated with the pace at which consumers are predicted to:

- Electrify their homes and businesses.
- Improve the energy efficiency of residential premises, commercial buildings and industrial facilities.
- Take up energy storage technologies, including vehicle-to-building/grid technologies.
- Shift load away from peak times as a change in behaviour, effective in soaking up the 'solar sponge' negative wholesale periods. For instance, pre-cooling and heating of buildings.
- Allow retailers and DNSPs to control their flexible loads in an 'orchestrated' way.

Importantly, the ISP should provide much more explicit and detailed guidance to policymakers on assumptions around efficiency, electrification and concertation, including investment costs for these changes, to inform policy and investment decisions.

Question 7: Will the proposed solution address the issues raised by the proponent and improve the robustness of the ODP?

(a) Would the proposed rules enable more in-depth analysis of CER and distributed energy and its impact on operational demand forecasts in the ISP? Why or why not?

(b) What type of demand-side information should be provided by DNSPs that would be useful for the ISP analysis?

The proposed solution will go part of the way to addressing the issues and improve the robustness of the optimal development path (ODP). However, the proposal:

- is limited in scope (See question 6) and should be expanded to include energy efficiency resources; and;
- specifically excludes the idea of expanding the ODP to co-optimize between investments in supply-side and demand-side resources.

Consequently, the proposal risks missing an important opportunity to shift the ISP closer to being a true whole-of-system plan. These two shortcomings are discussed in more detail below.

The need to include energy efficiency resources to shape investment decisions

One of the main issues with the ODP is that demand is treated as an exogenous input in the modelling. AEMO makes efforts to estimate the potential for energy efficiency to reduce demand, by commissioning modelling² that uses a combination of statistical analysis of historical trends in sectoral energy intensity and information gathered from governments on energy efficiency policy impacts.

However, similarly to the other demand-side resources, there is very little detail provided as to *how* permanent reductions in demand through energy efficiency upgrades could be achieved (in which sub-sectors, areas of the grid, and the types of technology upgrades made), the feasibility of their achievement, the cost per upgrade, or the size of the investment required to achieve the outcomes modelled. Without this detail, energy system planners, investors and policymakers lack the necessary information to weigh up investments in demand- and supply-side resources.

Australia consistently ranks at the bottom of league tables for energy intensity, suggesting there is significant untapped potential to reduce electricity demand across the economy via energy efficiency upgrades, including in:

- residential buildings, where the average energy performance of homes built pre-2003 is estimated to be less than 2 stars out of 10.
- industry, where a lack of policy drivers, institutional barriers, combined with historic low energy prices have left opportunities to optimise energy use in many industry subsectors, particularly in industries not subject to mandatory energy reporting or the Australian Government's Safeguard Mechanism.

While the impacts of fuel switching from gas to electricity is an increasing focus of the ISP, with AEMO commissioning CSIRO to conduct vehicle stock modelling to better understand the potential impacts

² Strategy, Policy, Research (2023), *Energy Efficiency Forecasts 2023 – Final Report*, <https://aemo.com.au/-/media/files/major-publications/isp/2023/iasr-supporting-material/2023-energy-efficiency-forecasts-final-report.pdf?la=en>

of EV uptake on demand, the same is not true for energy efficient technologies. Modelling akin to CSIRO’s EV stock modelling, for example, on potential building thermal performance and energy efficient appliance and equipment upgrades, including costs, could identify opportunities for investments that deliver the ODP at much lower cost and with potentially greater ease than supply-side investments.

The need for co-optimisation across supply and demand

The proposal explicitly excludes expanding the ODP by co-optimising investments in supply-side infrastructure alongside investments in CER, distributed resources or the distribution network.

The EEC believes this is a missed opportunity to improve the way AEMO conducts energy system planning and continues a long-term shortcoming of the ISP.

Requiring AEMO to consider investments in both supply- and demand-side resources equally in its modelling would ‘level the playing field’ between the supply and demand side in the ISP, which has hitherto helped to drive investment in generation and transmission infrastructure while failing to support investments in behind-the-meter resources.

Energy efficiency, flexible demand and other behind-the-meter resources are likely to deliver energy services at much lower cost than the supply-side of the energy system. By not treating the demand-side equally with the supply-side in the ISP modelling, the ISP may not be effectively helping to support achievement of the National Electricity Objective, namely “the promotion of efficient investment in electricity services for the long-term interests of consumers of electricity with respect to *price*.”

As the demand-side is integral to helping the supply-side of the electricity system decarbonise, given the variability of renewable energy generators, ignoring these measures will also slow Australia's progress to achieving a net zero emissions energy system and run contrary to the emissions reduction objectives of the National Energy Objective.

Question 8: What are your views on the costs and benefits of the proposed solution?

(a) What do you consider will be the benefits of the proposed solution? Is there anything that might erode the benefits or reduce the likelihood of achieving the benefits? Are there any additional amendments that could be made to improve the benefits?

(b) What are the costs DNSPs might incur in complying with requirements to provide further information? Do the benefits outweigh the costs? Should DNSPs be required to provide further information in their DAPRs or elsewhere?

(c) Would the proposed solution impose costs on any other stakeholders? If so, how might these costs be minimised?

The costs of an expanded proposal – i.e., one that includes energy efficiency resources and requires AEMO to expand the ODP modelling to co-optimize between the supply and demand sides of the electricity system – would be far exceeded by the benefits, which would include:

- Ensuring that the ISP presents a more holistic view of the range of energy technologies available to meet the needs of electricity consumers connected to the NEM.

- Limiting the need for costly, and potentially more difficult investments in supply-side transmission infrastructure, for which social license issues have recently emerged, as evidenced by the proposed rule change ERC0397 on better integrating community sentiment into the ISP.

Question 9: Are there important implementation considerations for the Demand-side rule change request?

- (a) What implementation issues should be considered? For example, are DNSPs likely to face any challenges in complying with new information obligations?
- (b) Are there any transitional measures that should be considered to support the implementation of the rule in time to inform the 2026 ISP?
- (c) If adopted, should the development of guidelines be subject to the Rules Consultation Procedures under NER Rule 8.9?

The EEC has no views on the implementation considerations specific to the current rule change request.

Question 10: Are there alternative solutions to those proposed in the Demand-side factors rule change request?

- (a) Do you consider alternative, more preferable solutions exist to address the identified issue?
- (b) Should guidance on information required to be provided by DNSPs be set out in an AER or AEMO guideline, or in the NER?

See answers to questions 6 and 7, which outline how the request could be improved.

Appendix A: A Demand-Side Statement of Opportunities

Key to implementing an ISP that drives investment and development in the demand-side of the energy system is the development of a system-wide evaluation of opportunities and gaps that demand-side energy resources and interventions could solve.

Creation of a DSOO is the critical, foundational enabler for holistic inclusion of energy demand in the ISP.

A DSOO should cover a range of demand-side resources, including:

- Large-scale demand response and demand management resources
- Electrification, energy efficiency and fuel-switching resources
- Consumer generation resources
- Forecasts and trends in energy use in residential, commercial and industrial energy use

It is likely that a DSOO would need to begin as a high-level document based on data already held by AEMO, with further iterations becoming more granular over time. Some information is already included in the ESOO and GSOO but does not currently serve the purpose of informing the market and policy makers about the opportunity for demand-side energy resource development.

The DSOO should seek to Inform:

- Market participants, who should be guided towards investments in demand-side energy resources that will support system security and reliability at low cost
- Policy makers, who should receive information on the current state of demand-side resources (including distributed energy resources, demand management, demand response and energy efficiency) and opportunities for policy measures that would better align energy demand with supply
- Regulators, who should be able to use the DSOO (and ISP) to guide decisions made in economic regulation of energy markets (e.g. RIT-T and RIT-D processes).

For example, an initial DSOO could include:

Information and improved forecasting of energy use and demand-side resources

Current energy demand modelling and forecasting is relatively limited. A more comprehensive model of predicted energy demand (and the energy-demand supply balance) across different jurisdictions is necessary, as well as a better understanding of the current level of demand-side resources that are, or could be, brought to market.

Assessment of interactions between policy measures (both energy and non-energy) and energy demand

Energy demand is contingent on a wide range of factors, and policy measures have an even more significant impact on energy demand than energy supply. For example, evolution in buildings, transport or industry policy can substantially affect energy demand, and there is currently no clear, comprehensive and integrated assessment of the effects (positive or negative) that these policy changes might have.

Identification of network problem spots or constraints where demand response or management could be highly valuable.

AEMO already holds significant data about network constraints, congestion and sub-optimal infrastructure use. An initial parse of this data to identify places where there could be potential to

introduce a demand-response facility or other demand-side measures to alleviate pressure on local infrastructure. Initially, this identification would be high-level, but could be iterated over time to identify more granular locations and time that could benefit from bringing demand-side energy resources to market.

Over time, the granularity of this assessment could improve. A later assessment could focus on regions of increasingly smaller size – identifying a suburb or town that had particularly high penetration of solar resources that were not matched effectively with demand – providing an opportunity for investment in aligning demand to take better advantage of that demand. Equally, a region with a particularly ‘peaky’ demand profile could be a prime location for investment in demand-side management, such as aggregated demand response resources or virtual power plants.

Identification of actionable demand-side measures

In the same way that large-scale energy supply projects in regulated markets are guided by coordination through the ISP, demand-side projects in regulated markets could also be guided by a revamped ISP. In particular, guidance on how demand-side measures could help bridge risks of unserved energy higher than the reliability standard, or provide alternative insurance pathways to hedge against non-delivery of other energy system projects.

Timeline

The ESOO and GSOO are annual exercises and the DSOO should be as well. The EEC suggests that the ISP review process suggests an initial DSOO to be delivered by the end of 2024, with a revised and improved version to be published in 2025, to help inform the 2026 ISP.



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