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To: The Australian Energy Market Commission
RE: Enhancing the Integrated System Plan to support the energy transition

Thank you for the opportunity for the Institute for Energy Economics and Financial Analysis (IEEFA) to provide input into the Australian Energy Market Commission (AEMC)'s consultation on *Enhancing the Integrated System Plan to support the energy transition*.[1]

IEEFA is an independent energy finance think tank that examines issues related to energy markets, trends, and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy.

Our comments on the proposed changes are contained in the following pages. Overall, we have found that:

- Some targeted improvements to the gas analysis underpinning the Australian Energy Market Operator (AEMO)'s Integrated System Plan (ISP) would be useful and lead to more robust outcomes, but not all proposed changes are necessary.
    - The proposed change to the National Gas Rules (NGR) to enable gas information received under the NGR to help inform the ISP appears to be useful, to ensure the ISP is well informed.
    - The change to the National Electricity Rules (NER) "to require AEMO to publish gas market projections and undertake an expanded consideration of gas generation, supply, and infrastructure, including costs, when preparing the ISP" does not seem necessary. It appears likely that the most material improvements to gas analysis in the ISP could be implemented by improving the ISP's modelling inputs and methodology, or through a more minor change to the rules.
    - There is inadequate evidence to suggest that the publication of 'gas market projections' would improve electricity infrastructure decision-making. "Gas market projections" should not be undertaken in the ISP process as they are very separate to the electricity plan and much broader than electricity (most gas in Australia is exported in the form of LNG, much of the remainder is used in mining and manufacturing[2]).

[1] AEMC. Enhancing the Integrated System Plan to support the energy transition. 20 June 2024.
[2] Australian Government. Australian Energy Flows 2021-22.

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- The proposed changes around improving the consideration of demand-side factors in the ISP are a helpful initial step forward. However, we believe:
    - The proposed "CER [consumer energy resources] and distributed resources" statement should be sure to include demand flexibility measures. Further, this rule change should also consider how to provide more clarity around energy efficiency and electrification development pathways and any other possible demand-side interventions.
    - The "CER and distributed resources" development & operational behaviour statement appears likely to be very helpful. However, this rule change should propose that AEMO set out in the "CER and distributed resources" statement the potential benefits/costs associated with higher DER uptake, and analysis of the risk of overbuild of supply-side and large-scale investments in the event that we have higher DER than forecast. To inform this, AEMO should run a higher DER scenario or sensitivity.
    - This rule change should propose changes to enable some level of co-optimisation or iterations between demand- and supply-side modelling, to better understand the possible range of options that might deliver the lowest-cost pathway.
    - Improving collection of DNSP data and integration into the ISP is helpful, and developing a process for how this data is collected into the ISP is necessary. Distribution network service provider (DNSP) information-gathering processes should be transparent, the data should be publicly released, and the methodology for how the data is incorporated into the ISP should be detailed and publicly released. A consultation process on how the data is collected and incorporated into the ISP should be undertaken.

Kind regards,

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Better integrating gas into the Integrated System Plan (Electricity and Gas) Rule

Question 1: Should greater gas market analysis be required under the ISP?

(a) Would requiring AEMO to include greater analysis of gas in the ISP provide benefits to electricity consumers? This includes information to inform the following:
• further analysis of future gas demand and pricing
• developing projections about the future utilisation of gas infrastructure
• collating pipeline closures or conversion dates
• reflecting updated gas generator fuel costs
Should the rules be amended to explicitly require this?

IEEFA's view is that some additional analysis of gas to make sure the correct assumptions are included in the ISP are warranted, but a rule change is likely not needed to do this.

In our submission to AEMO's draft 2024 ISP, IEEFA observed that "more interpretation [was] needed to explain the level of divergence in several GPG [gas power generation] outcomes compared with the 2022 Final ISP".[3]

Specifically, we found that "[The] draft 2024 results imply that by the 2030s, the least-cost pathway for the NEM is to halt investment in medium and deep utility-scale storage but invest significantly new GPG capacity with low future utilisation rates. This contrasts significantly with the final 2022 ISP and 2020 ISP which come to a different conclusion."[4]

Our detailed analysis of the draft 2024 ISP outcomes revealed inconsistencies between AEMO's gas price assumptions and market conditions as assessed in the most recent Gas Statement of Opportunities (GSOO). It also raised the concern that the gas generation outcomes in AEMO's ISP may be sensitive to a range of input assumptions that had changed compared with previous ISPs, due to methodology changes that were not well articulated in the draft ISP.

Other stakeholders raised several concerns in their submissions to AEMO's draft 2024 ISP, to which AEMO responded "AEMO acknowledges the Draft 2024 ISP did not consider the additional costs associated with delivering fuel to GPG during peak periods and gas infrastructure limitations."[5]

AEMO has since provided an assessment of the availability of fuel for GPG in the ISP, finding that there may be peak periods where gas is unavailable, but that the use of on-site liquid fuels is likely to be the most economical solution.[6]

[3] IEEFA. Submission to the Australian Energy Market Operator's Draft 2024 ISP Consultation. 1 March 2024. Page 4.
[4] Ibid. Page 5.
[5] AEMO. 2024 ISP Consultation Summary Report. June 2024. Page 25.
[6] Ibid. Page 26.

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While this analysis was useful, it does highlight gaps in the existing AEMO ISP modelling process that could materially impact the optimal development pathway (ODP).

AEMO includes considerable gas analysis in the current ISP process. Demand for gas in end-use sectors and liquefied natural gas (LNG) is considered via the multi-sector modelling, and gas demand for GPG is an outcome of the ISP model.[7] The AEMC should engage with AEMO to ensure the existing gas analysis in the ISP is clearly understood, before imposing any additional requirements via a rule change.

However, IEEFA considers that some additional level of gas analysis could benefit the current ISP. Specifically, it should include consideration of:

- The need and associated costs of any new gas infrastructure that would be required to support gas outcomes in the ISP;
- Any increased costs to end-users that result in diminished utilisation of gas infrastructure (for example, if large numbers of users cease to use gas networks, remaining users may be required to bear a higher share of the network's fixed costs);[8] and
- Any demand 'tipping points', beyond which it would not be economically feasible to deliver reticulated gas to end users via existing networks.

If these factors were appropriately built into the existing ISP's cost optimisation, it would improve the robustness of the ISP's outputs.

We also note that AEMO's existing GSOO provides considerable gas analysis, with the aim to forecast "the adequacy of gas supplies in central and eastern Australia, based on information from gas industry participants".[9] Some of the proposals in this rule change, such as the collation of pipeline closure dates, may be better suited to the scope of the GSOO.

The rule change proposal has not defined what is meant by 'conversion dates'. IEEFA has here assumed that this refers to the conversion of a gas pipeline to deliver some fuel other than fossil gas – such as hydrogen or biomethane.

IEEFA does not believe that including expected conversion dates in the ISP would be useful, and in fact could provide confusing signals to the energy market, given that:

- The repurposing of pipelines to deliver hydrogen or biomethane to residential end-users is unlikely to be economically or technically feasible;[10] and

[7] CSIRO and Climateworks Centre. Multi-sector energy modelling 2022. December 2022.
[8] For example, see IEEFA's modelling of this effect for Victoria's gas distribution networks in: IEEFA. Managing the transition to all-electric homes. 2 November 2023. Page 20.
[9] AEMO. 2024 Gas Statement of Opportunities. March 2024. Page 4.
[10] IEEFA. 'Renewable gas' campaigns leave Victorian gas distribution networks and consumers at risk. 17 August 2023.

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- While hydrogen may provide value in particular end-use sectors, the exact timing and delivery mechanisms of the hydrogen would depend on a broad range of factors that AEMO is not best-placed to forecast – such as the market for 'green' manufactured products and trade-offs between on-site versus grid-connected hydrogen production.

AEMO should endeavour to include the most up-to-date costs possible in the ISP, including generator fuel costs. However, it is not clear that this would require an explicit rule change. Generator fuel costs may be one input under which AEMO could incorporate the improved gas analysis discussed here. However, the AEMC should engage directly with AEMO to understand if there are any constraints inhibiting this analysis under the existing rules.

(b) Should the rules be amended to enable AEMO to utilise gas information provided to it under other functions?

Yes. In previous submissions to AEMO, IEEFA has observed inconsistencies between AEMO's GSOO and the ISP.[11] These inconsistencies extend to GPG outcomes and fuel price assumptions. They create confusing signals for the energy market and can diminish the confidence that market participants can have in the ISP's optimal development pathway.

In many circumstances, it may be more appropriate and efficient for AEMO to leverage information it has available under its gas planning functions (including for the GSOO), rather than produce new gas analysis specifically for the ISP.

Question 2: Will the proposed solution support a more robust ISP by better integrating gas and electricity infrastructure developments?

(a) Will requiring AEMO to carry out further analysis of gas in the ISP improve the ISP analysis? Why or why not?

IEEFA considers that several of the objectives behind the proposed rule change would improve the ISP. However, it is not clear that the proposed methodology is aligned to those objectives.

The rule change observes, correctly, that AEMO does not adequately consider costs associated with gas infrastructure developments, the likelihood or commercial feasibility of GPG, or the availability of gas to service GPG requirements. While above we have discussed how some of these factors were considered between the draft and final 2024 ISP, they are not comprehensively built into AEMO's models.

As AEMO has already acknowledged and responded to this shortcoming, in the first instance the AEMC should engage with AEMO to determine if these factors could be introduced as new inputs to the ISP without the need for an explicit rule change.

[11] IEEFA. Response to AEMO consultation on updates to the ISP methodology. 1 May 2023. Page 5.

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The rule change request proposes to amend "clause 5.22.6.(a) to require AEMO to publish gas development projections in the ISP", claiming that these projections will "better inform what electricity infrastructure investments are required".

This is not substantiated. AEMO's existing ISP outputs already inform what electricity infrastructure investments are required in their scenarios. As discussed here, these outputs could be improved if some additional gas analysis were incorporated into the ISP's modelling inputs and methodology. However, the proponent has not explained how market participants would use new 'gas development projections' to better inform required electricity infrastructure investments.

Moreover, only a small fraction of Australia's gas resources are used in the electricity sector. By 2030 the amount of east coast gas production that will be used in gas-powered generation will be around only 4%.[12] Gas is not only used in the electricity sector but also for many other end uses, the majority being exported and much also being used in the mining and manufacturing sectors.[13] The ISP is a plan for the electricity market, and gas is only one small input into the electricity sector. Therefore any 'gas development projections' would presumably need to look much more broadly at the whole gas market rather than just one subset of the market (electricity), and should be undertaken and examined quite separately to electricity sector planning.

Otherwise it begs the question: where will AEMO's ISP analysis end? Will coal projections, lithium projections and steel projections also be expected to be completed in the ISP process? This seems much too onerous, and a better approach would be to include the correct, up-to-date inputs and assumptions about these markets into the ISP wherever possible, rather than AEMO developing specific projections for these markets in the ISP itself.

The rule change also specifies that it "would require AEMO to explicitly describe its assumptions about the future of gas and ***provide a consolidated gas industry view*** of what the future may look like in the various ISP scenarios, based on AEMO's engagement with industry" (emphasis added).

IEEFA agrees that AEMO should continue to explicitly describe the assumptions underpinning the ISP, including how they relate to the future of gas. However, as with other assumptions, these should be developed independently by AEMO with consideration to feedback from their broader stakeholder base.

It is inappropriate for AEMO to focus on views from only one sector of market participants, such as the gas industry, which may differ from other market participants such as consumers, electricity networks and non-gas generators.

[12] IEEFA. Gas' Role in the Transition. May 2023. Page 5.
[13] Australian Government. Australian Energy Flows 2021-22.

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Gas industry participants should have the opportunity to share their views on the future of gas alongside other market participants. This could occur within the ISP's existing engagement process and does not require a rule change.

It is also inappropriate to place too much focus in one electricity generation technology (particularly one that plays a minor role in the system), as this focus could very well come at the expense of focus on other equally important technologies such as energy efficiency, wind turbines or solar modules.

IEEFA is also concerned that several assumptions made by the proponent do not accurately represent the ISP modelling process. For instance, the statement that "AEMO currently incorporates some gas market data which focuses on the requirement for gas to firm up the energy market in terms of any shortfalls associated with weather dependent energy generation" is inaccurate.

AEMO currently incorporates some gas market data, such as cost projections, as an input to determine the least-cost pathway out of a broad range of different technology options to meet the future needs of the NEM. It does not make the inherent assumption that GPG will be a required technology to provide firming needs, and the ISP model is not limited to only considering GPG as an option to fill renewable generation shortfalls.

We recommend the AEMC engage directly with AEMO for clarification on these points.

(b) Is it appropriate for AEMO to use gas information available to it under the NGR for the purpose of the ISP? Are there any risks that we should be aware of in extending the use of or publication of specific information

It is likely that the additional gas information of use to AEMO to inform the ISP would overlap with information it already uses to inform the GSOO. Given the importance of alignment between AEMO's gas and electricity planning documents, it would be appropriate to use this information for the ISP.

Any new gas information that is introduced as an input to the ISP should be publicly disclosed alongside AEMO's other inputs and assumptions, to enable transparent consultation and a more robust ISP.

Question 3: What are your views on the costs and benefits of requiring AEMO to undertake additional gas analysis in the ISP?

(a) What do you consider to be the benefits of the proposed solution? Is there anything that might erode the benefits of reduce the likelihood of the benefits being achieved?

The primary benefits of undertaking additional gas analysis in the ISP would be to improve the robustness and confidence of the ISP's modelling outputs.

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These benefits would be eroded if the additional gas analysis were used for the development of a new ISP output (gas development projections) rather than as an input into the existing methodology.

It would also be eroded if the additional gas analysis were not developed under the same level of stakeholder scrutiny as AEMO's other analyses and inputs – for example, if AEMO were required to give disproportionate weight to gas industry perspectives when developing the assumptions.

(b) What do you consider to be the costs of the proposed solution?

Any additional analysis introduced into the ISP has the potential to incur additional costs for AEMO. It is likely that an approach to introduce new targeted analysis as an input into the existing ISP would incur fewer costs than an approach that results in a new ISP output, such as gas development projections.

Question 4: What implementation considerations need to be considered?

(a) Do you have any concerns about sharing gas information received under the NGR for the purposes of developing the ISP? Is there sufficient clarity on what information should and should not be publicly disclosed?

IEEFA does not have any concerns with gas information used by AEMO for the purposes of undertaking its gas planning functions being used within the ISP, given that the context for usage of this information is appropriately similar.

Greater clarity may be needed around what information should be publicly disclosed. IEEFA suggests that gas information could and should be publicly disclosed where:

- It is a material input to the ISP that may influence the final outcome; and
- It would enable more informed decision-making across the energy market.

(b) Are there any other implementation issues that should be considered?

No comment.

Question 5: Are there alternative ways in which further analysis can be included within the ISP instead of the proposed rule change?

(a) Would the development of a procedure or policy enable the same outcome?

IEEFA considers that the proposed new rule under the NGR (authorising AEMO to use and disclose greater gas information to develop the ISP) is useful, and cannot be achieved by another process.

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As discussed above, we do not consider it useful to amend clause 5.22.6(a) of the NER to require AEMO to publish gas development projections in the ISP.

Consistent with the discussion above, we consider that the proposed amendments to NER clause 5.22.10 would not help to achieve the articulated objective of the rule change.

The AEMC should consider one of two options:

1. A smaller amendment to NER clause 5.22.10 that would require AEMO to consider a discrete list of gas market factors that should be considered as part of its electricity sector modelling; or

2. Making no changes to the NER, and developing guidance to the above effect via an existing AEMO procedure.

(b) What level of prescription vs principle is appropriate when setting out the requirements for the ISP?

A prescriptive rule change is useful where a clearly defined barrier has been identified. For example, to enable AEMO to better utilise information made available to it for functions other than the ISP.

However the risk of an overly prescriptive approach is that it may impose additional costs and lock AEMO into a particular approach for the ISP, regardless of whether it ends up providing a useful means to meet the objectives of the rule change. This risk could present under the proposed amendments to NER clause 5.22.10, which are highly prescriptive.

Improving consideration of demand-side factors in the Integrated System Plan (Electricity) Rule

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?

Yes, the ISP should include greater consideration of the assumptions and contingent factors underpinning DER development. This is important, because DER will make up a significant proportion of the generation, storage and demand-side resources in the future. It is key for the industry, policymakers and planners to understand how DER measures can support system cost reductions and how the potential benefits of DER can be maximised. This will enable suitable, informed action on DER.

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At present there is not enough clarity around a number of CER assumptions, as we mentioned in our submission to AEMO's draft 2024 ISP.[14] Understanding of the ISP's assumptions around DER is critical so that stakeholders understand what is involved in reaching higher DER uptake.

(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?

Yes. To the energy analysts at IEEFA it appears that AEMO is constrained in its ability to access distribution network information – though we note that AEMO and DNSPs would be best placed in answering this question. As we wrote in our submission to the 2024 draft ISP, "the ISP does not appear to fully reflect the detailed plans and responsibilities of distribution businesses to incorporate more DER into the distribution networks. The appendices and main report of the draft 2024 ISP do not explore distribution networks in detail." [15]

We believe there is merit in collecting more distribution network information to support the ISP process and ensure that it is well informed. "IEEFA recommends AEMO work with distribution network companies, industry and consumers to develop a process to incorporate distribution inputs into its planning. Such a process needs to be open and transparent and well documented."[16]

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?

The three components of the proposed rule are below (proposed to be ready in time for the 2026 ISP):

1. Requiring AEMO to include a statement on the expected "CER and distributed resources" development and operational behaviour including assumptions and factors impacting "CER and distributed resources".

2. AEMO developing guidelines for a process to gather DNSP data to inform demand-side factors analysis.

3. Mandatory requirement for DNSPs to disclose information.

[14] IEEFA. Submission to the Australian Energy Market Operator's Draft 2024 ISP Consultation. 21 February 2024.
[15] Ibid. Page 15.
[16] Ibid. Page 15.

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At IEEFA, we believe these proposed rules could support improved analysis of DER in general. However we have some comments on the specifics of these changes.

Component 1. AEMO statement on "CER and distributed resources" development and operation

The "CER and distributed resources" statement should include demand flexibility. Further, energy efficiency, electrification and other possible demand-side interventions should also be explored in more depth in the ISP - further explanations around assumptions and anticipated pathways of energy efficiency and electrification are needed in the ISP. These measures can offer benefits to the energy system overall and should all be analysed and reported on in depth. This rule change should consider how to provide more clarity around the factors, assumptions and development pathways relating to energy efficiency, electrification and other demand-side measures.

IEEFA believes that assumptions around DER should be detailed in greater clarity to support informed energy system planning and policymaking, as we have explored in previous submissions and reports.[17,18] A DER statement in the ISP would be helpful for achieving this.

The AEMC notes that the "CER and distributed resources" statement would set out "the need for alternative investments to meet operational demand if forecast uptake and orchestration of CER and distributed **resources do not eventuate**". Equally, however, IEEFA believes that a higher DER level should be analysed to examine the risk of overbuild of supply-side and large-scale investments in the event that we have higher DER than forecast (and the potential benefits associated with higher than expected DER levels). Given that the pace of rooftop solar photovoltaic (PV) installations has exceeded expectations over many years, an analysis like this is warranted. A further bullet point should be added, written as "the need for reduced investments to meet operational demand if the uptake and orchestration of DER **are higher than forecast**".

As we explored in a recent briefing note, there are a number of respects in which AEMO's forecasts on DER could be under-estimations: "IEEFA's analysis suggests that AEMO's forecasts of rooftop solar and electric vehicle (EV) vehicle-to-grid (V2G) in the draft 2024 ISP are pessimistic in several respects. Therefore, DER could play an even greater role in the system than AEMO is currently estimating in its Step Change (central) scenario."[19]

Notably, the Australian PV Institute (APVI) estimated the technical potential of rooftop PV to be 179GW in 2019 – if we scaled this up taking into account improvement in PV module density since 2019, it would be around 256GW today. However, AEMO's draft 2024 ISP only reaches 76GW of rooftop PV in 2050 in its Green Energy Exports scenario, and 72GW in Step Change – around a third of the technical potential.

[17] IEEFA. Submission to the Australian Energy Market Operator's Draft 2024 ISP Consultation. 21 February 2024.
[18] IEEFA. Integrated System Plan needs greater ambition on DER to be a true whole-of-system plan. May 2024.
[19] Ibid. Page 1.

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To ensure AEMO is planning for the broad possible range of future outcomes around DER, and developing a clear understanding of the benefits/costs of higher DER uptake, AEMO should undertake a higher DER scenario.

Further, the AEMC consultation paper notes that the DER statement would include "what uncertainties there are about the assumptions underpinning the development of CER and distributed resources" and "ways in which greater certainty could be provided". IEEFA also believes the DER statement or the ISP itself should explore the benefits/costs of high DER uptake to the overall system. Our research has shown that the economic benefits associated with DER could be very substantial.[20] They would provide a context for the expected DER development pathways and a level of understanding around the importance of DER development.

Components 2 & 3: Guidelines for information-gathering from DNSPs, and mandate on DNSP information disclosure

Distribution networks will be greatly impacted by the energy transformation and will have a key role to play. Given this, we believe the integration of distribution network planning with the ISP processes should be improved. A transparent, well-documented process needs to be established to take into account DNSP data and DNSP plans.

A clear process for what is done with that data would be helpful – including the ways in which AEMO will examine the data and use it to develop the lowest-cost pathway. Consultation on how the data is collected and incorporated into the ISP process should be undertaken.

The data should also be made open to stakeholder scrutiny and feedback to promote transparency and improve collaboration efforts as well as assist more informed decision making by consumers, industry and government.

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

Types of information that could be provided by DNSPs that may be valuable if included in the ISP process include:

- Network capacity and utilisation metrics.
- Voltage level time of day patterns, expected drivers in changes in load and generation by time of day that could be expected to increase or decrease voltage, and listing of alternative options for keeping voltage within specifications. If certain DNSPs do not have this data then it should be explicitly acknowledged by the DNSP that they lack this information.

[20] IEEFA. DER could provide $19 billion economic boost by 2040. 15 February 2024.

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- Existing network assets and planned network assets.
- DNSP DER and demand-side related plans and policies.
- Capacity in the distribution network for new renewable generation connections (e.g. small scale solar farms)
- Information regarding the rollout of Dynamic Operating Envelopes (DOEs).

Ideally, AEMO should provide a template for the DNSPs to provide this data, such that it is in a standardised format. Some form of auditing could be considered to ensure data is consistent and objective across DNSPs. This data should also be made public.

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?

IEEFA analysed a range of studies and found that there is potentially $19 billion in net present value economic benefits to 2040 and a further potential reduction in wholesale market super profits of $10 billion from high uptake of DER (including demand flexibility).[21] The benefits are significant; indeed, they could be even higher as the studies we analysed were already out of date and did not always examine the full potential, mostly examining likely scenarios. To achieve these economic benefits requires an increase in DER uptake and improvements in DER integration, which could be achieved through enhanced markets, polices, programs and planning.

To help access these benefits, the rule changes proposed in this consultation around demand-side planning are a start, but more action will be needed. We believe that to adequately chart the lowest-cost pathway for the NEM, the ISP needs to fully consider all DER and demand-side measures alongside supply-side options, and co-optimise between both to the greatest extent possible – rather than completing the demand-side and DER modelling and treating it as an input into the supply side and transmission modelling. Co-optimisation between demand-side and supply-side measures would help maximise the benefits from DER by charting the lowest-cost pathway for the energy industry to work towards (see our answer to Question 10 below for more information on co-optimisation).

As we wrote in the DER economic benefits report:

"*Including the likes of rooftop solar combined with stationary batteries, batteries on wheels (in other words, electric vehicles), and flexible demand (such as hot water systems), DER can*

[21] IEEFA. DER could provide $19 billion economic boost by 2040. 15 February 2024.

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respond quickly to signals to export, import or store electricity, and so can provide almost any service the grid needs. With this will come a range of economic benefits including reducing electricity system costs."[22] […]

"This meta-analysis finds that, based on the results of studies by Baringa Partners and NERA Economic Consulting, DER integration could deliver a ***combined net present value (NPV) of more than $19 billion by 2040.*** *The Baringa study found $11 billion in distribution and transmission network avoided costs and benefits of DER integration. Meanwhile the NERA study found $8 billion in generation and storage cost reductions resulting from high levels of DER with high flexibility.* ***In addition, there is $10 billion in wholesale market super profit reductions which would benefit consumers****, according to the NERA study.*

"The Baringa and NERA studies had no overlap in their modelled value streams. Summing two separate studies like this is not without risk, especially as the Baringa study is based on 2020 forecasts and does not include flexible demand more broadly or from electrification. Nonetheless, ***the $19 billion figure gives a sense of the magnitude of the economic benefits that could be unlocked if the energy transformation supports DER investment and integration.***

"Further research is needed to fully understand the economic value of rooftop solar, battery storage and flexible demand."[23] […]

"Our meta-analysis concludes that we need significant, courageous action on DER integration as soon as possible if we want to underpin Australia's future economic prosperity with lower electricity and transport costs, and electrification to eliminate dependency on gas. DER must not come second in policy, planning and regulation to transmission and large-scale generation. DER must be considered on equal terms, with more thoughtful recognition of the multiple benefits outlined in this report."[24]

(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?

As mentioned above, the potential benefits of well-integrated, high uptake of DER are significant. We believe they would far outweigh the additional costs required to undertake the appropriate modelling and information-gathering processes to support better analysis of DER.

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

IEEFA does not have any comment on this issue.

[22] IEEFA. DER could provide $19 billion economic boost by 2040. 15 February 2024. Page 5.
[23] IEEFA. DER could provide $19 billion economic boost by 2040. 15 February 2024. Page 6.
[24] Ibid. Page 7.

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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?

We believe the potential challenges in complying with the new obligations could be minimised with a smooth process that is improved over time. The potential benefits on offer from improving the analysis of demand-side and DER measures are significant and would be well worth a considerable level of effort.

(b) Are there any transitional measures that should be considered to support the implementation of the rule in time to inform the 2026 ISP?

It is important that the 2026 ISP includes improved clarity around DER projections (including the policies assumed in various scenarios) and a higher DER scenario. The upcoming Inputs, Assumptions and Scenarios Report (IASR) process should explore DER in greater detail.

(c) If adopted, should the development of guidelines be subject to the Rules Consultation Procedures under NER Rule 8.9?

Yes. The guidelines are very important and energy industry stakeholders should be consulted on them. The processes to incorporate DNSP data into the ISP should be transparent and should be consulted upon.

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?

We believe more should be done beyond these proposed changes. We believe co-optimisation between the demand side and supply side should be undertaken. This rule change process should propose some level of co-optimisation between supply and demand.

As we wrote in a prior submission, “In the current proposed methodology, whole-of-economy system costs and electricity system costs are optimised separately, via the multi-sector modelling and capacity outlook/time-sequential modelling, respectively. The current one-way linkage between these steps leads to a risk that the demand side and supply side are not fully cost-optimised. For instance, the capacity expansion model has no visibility over demand-side measures that could reduce the need for additional capacity at a lower cost than supply-side

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measures. This can lead to a bias where the ISP focuses disproportionately on supply-side measures to reduce system costs."[25]

This could be improved if the demand-side and supply-side modelling were performed in iteration, rather than completing one side of the modelling before the other.

Therefore, "IEEFA recommends AEMO examine flexible demand opportunities in more detail in the short term, and co-optimise between demand and supply in the 2026 ISP."[26]

In response to its Review of the Integrated System Plan, the Energy and Climate Change Ministerial Council (ECMC) recommended that "The System Planning Working Group and AEMO will work with the relevant stakeholders, including DNSPs, to develop a suitable approach to trade off the cost of unlocking increasing tranches of orchestrated CER and distributed resources against other investment options for use in the earliest ISP practicable."[27]

IEEFA acknowledges that this is a considerable modelling task, and that it may take some time to develop an appropriate approach. However, we also note that this is a considerable gap in the current ISP, and that the scale and pace of required investments in the electricity system to support the current ISP is very large. This could result in significant cost lock-in if it eventuates that some of these investments could be avoided via demand-side measures. We therefore recommend the AEMC formalise the ECMC's recommendation to develop a suitable co-optimisation approach in time for "the earliest ISP practicable".

We also note that to extract the highest value from this approach, consumer investments in energy efficiency and electrification should also be covered in more detail in the ISP reporting. The "CER and distributed resources" definition should be sure to include demand flexibility measures.

(b) Should guidance on information required to be provided by DNSPs be set out in an AER or AEMO guideline, or in the NER?

We do not have any comment on where and how the information-gathering guidance be set out.

Better integrating community sentiment into the Integrated System Plan (Electricity) Rule

IEEFA does not have any comment in this area.

[25] IEEFA. Response to AEMO consultation on updates to the ISP Methodology. 1 May 2023. Page 3.
[26] IEEFA. Integrated System Plan needs greater ambition on DER to be a true whole-of-system plan. May 2024. Page 1.
[27] Energy and Climate Change Ministerial Council. Response to the Review of the Integrated System Plan. April 2024. Page 9.

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About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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