



Enabling the energy performance revolution: energy governance and market reform

A discussion paper released by the Australian Council of Social Service, the Australian Industry Group, the Energy Efficiency Council and the Property Council of Australia.

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1 Introduction

The Australian Council of Social Service, Ai Group, the Energy Efficiency Council, and the Property Council of Australia collectively seek to advance the potential for demand-side measures in the energy system to lower bills, reduce emissions, improve equity and energy security, improve business competitiveness, and accelerate the transition to a net zero economy.

Demand-side measures¹ can substantially lower the costs associated with the energy system by reducing the need to overinvest in supply-side infrastructure to meet infrequent periods of high or mismatched demand for energy services. In doing so, they can ease supply chain challenges involved in rolling out new energy infrastructure, which are acute today and likely to remain important over the long term.

However, a range of barriers have long reduced Australia's use of demand-side measures. Historically, low energy prices have blunted incentives to invest in energy efficiency and management, and promotion of demand-side measures was not included in the design of national energy markets.

Reforms to energy governance and markets are crucial to enable greater demand-side participation in the energy system. Demand-side measures are frequently the subject of market failures such as split incentives, information imbalances, externalities and substantial market power imbalances, which are not adequately addressed by current energy policy and market settings.

The purpose of this document is to explore issues related to energy governance and markets that act as barriers to demand-side participation or inhibit promotion of demand-side measures as an equal or better solutions energy system challenges. The issues and reforms canvassed in this discussion paper primarily consider the jurisdictions that compose the National Electricity Market, although some of the proposed reforms will have national application.

Feedback on these questions is welcomed.

¹ In this paper, 'demand-side measures' refer to actions taken by consumers to reduce or alter their energy usage. These actions may reduce the volume of energy used or instantaneous demand, or manage the time or profile of their energy usage to make more cost-effective use of energy, including maximising the self-consumption of on-site renewable energy. Demand side measures encompass techniques such as energy efficiency, energy management, demand response, demand flexibility, demand management and load shifting. This paper will not consider the installation of behind-the-meter renewable energy generation (principally rooftop solar PV), which has already achieved substantial market maturity.

2 Why the demand side?

As Australia progresses towards an energy system characterised by high levels of variable renewable energy, the value of energy is changing considerably. As the Energy Efficiency Council's recent report *Clean Energy, Clean Demand* sets out, the time and place of energy use is becoming more important to the cost of energy, which can influence financial and non-financial outcomes for energy users. For example, at midday on a bright spring day when solar PV production is high, electricity supply is very cheap, but very expensive during extended periods of cold, overcast, still conditions. How energy is demanded – the time, place, and volume - can dictate outcomes for energy users.

For example, energy users that have highly inflexible energy use are likely to pay higher prices for energy. Similarly, inflexible energy use that creates additional demand on energy systems at times of high underlying demand is likely to create additional energy system costs for all users.

A focus on the demand side of the energy system – adapting how, when, and where we use energy – is imperative to undertaking an energy system transition which is equitable, rapid, as cost-effective as possible, and promotes both household wellbeing and business competitiveness and productivity.

Demand-side measures can significantly reduce energy bills, both for those who undertake the measures and also other system users. For example, minimum energy performance standards for refrigerators and freezers were estimated to have reduced demand for energy by 360MW in 2017² - about the size of a moderately large gas fired generator. Removing the need for this plant saves money for all energy users, while also saving money for operators of efficient refrigerators.

Demand-side measures also lead to multiple benefits, extending beyond energy system costs. For example, making buildings energy efficient not only reduces energy costs and emissions, but also makes strong contributions to the health and welfare of occupants. The Victorian Healthy Homes Program found that small energy efficiency improvements to houses yielded health system savings around ten times higher than associated energy bill savings, and participants reported improved health and wellbeing.³

Finally, better use of demand side levers could facilitate an expedited transition to zero emissions electricity. Improved energy performance reduces the amount of new infrastructure that must be built to replace high-emissions infrastructure. Making the best use of cheaper renewable energy directly will reduce the need for technologies that have higher cost or lower technological readiness, such as battery storage, carbon capture and storage, and other emerging firming technologies. Unlocking the potential of the demand side of the energy system could reduce the cost of the transition and bring forward its benefits sooner.

² Collyer, A, 2019, [Independent review of the Greenhouse and Energy Minimum Standards Act](#), Australian Government, Canberra.

³ Sustainability Victoria 2022, [The Victorian Healthy Homes Program research findings](#), Victorian Government, Melbourne.

3 Key issues

This discussion paper seeks to understand what solutions might exist to improving demand-side participation in the energy system. We have identified challenges with:

- **Energy system governance:** the policies, frameworks, and institutions that govern the energy system;
- **Energy markets:** the settings and mechanisms of energy markets that direct investment by energy suppliers and energy users, and
- **Energy user influence:** and the ways in which energy users interact with, and are understood by, energy governance and markets.

Overcoming barriers to greater demand-side participation in the energy system could be rewarding, but finding and implementing solutions are likely to be challenging. The federated nature of the National Electricity Market means that even reforms with broad support can take time to progress and implement. Creative and innovative solutions are likely to be required.

3.1 Distributed policy responsibility

Policy measures that influence energy demand are within the remit of a wide range of portfolios (transport, energy, buildings/housing, industry, innovation, state development, agriculture, social services, consumer protection etc. etc.), and distributed across federal, state/territory and local government.

This means that no single department, agency or government has responsibility for developing and implementing policies that encourage demand-side measures in the energy system. Further, it means that policies which have effects on energy demand are disconnected from policies and institutions that deal with energy supply.

In contrast, supply-side energy policy is focussed on a relatively narrow sector with a well-defined set of stakeholders and participants. While political responsibility for energy supply is shared between the Commonwealth and state jurisdictions, each jurisdiction has a well-defined set of administrative arrangements enabling effective policy development for energy supply.

Currently there is no mechanism for building connections and coordination between energy system policy and policies that affect – or seek to shape - energy demand. For example, there is little linkage between the setting of building codes and energy system planning, or between transport planning (which can impact energy use in specific areas) and energy market participants.

Nationally, there is no arrangement that creates responsibility and accountability for developing and promoting energy efficiency and demand-side policy.

With the forthcoming National Energy Performance Strategy, there is ambition to increase the level of activity and achievement of demand-side measures. However, unless effective, national governance arrangements for energy efficiency and other demand side measures are established, the Strategy risks not delivering on its ambition for a step change in demand-side achievement.

What's the problem?

Current governance arrangements are ineffective at advocating for, developing and implementing integrated energy efficiency and other demand-side policy across sectors and between sectors. For example, there is no current mechanism for coordination between demand-side policy and the energy system. This means that demand-side measures do not receive adequate attention as an important part of making an energy system that meets the community's needs at least cost. Making a case for energy efficiency measures (particularly publicly) is prosecuted by stakeholders that are inadequately resourced to undertake the research, analysis and development required.

Consultation questions:

1. What are your views on optimal integration of demand-side policy into the energy system?
2. What potential solutions are there to creating better integration, visibility and accountability of the demand-side in the energy system?
3. What are your views on the optimal integration of demand-side policy into non-energy sectors?

3.2 Energy system planning

Long-term energy system planning lacks connectivity with energy demand measures, and has little focus on opportunities for demand-side measures to create an optimal mix of investment in the energy system. In the NEM states, energy system planning is distributed amongst a variety of different bodies, with no one entity having final responsibility for the long-term planning and development of the energy network.

Energy system planning is undertaken through the joint efforts of an array of individual actors in the national energy markets – with different and potentially competing priorities and incentives that may or may not align with the wider interests of operating the energy system at lowest cost.

- The Australian Energy Market Commission creates the rules by which energy markets operate and development and investment are controlled. The AEMC is responsible for setting guidance on permissible and efficient investment in network assets.
- The Australian Energy Regulator is the market’s economic regulator and monitors compliance with the rules, as well as providing some market information that informs the work of other market bodies and stakeholders.
- The Australian Energy Market Operator is the market operator and provides information and forecasting services. AEMO creates long-term forecasts which are intended to guide investment decision in markets, however demand-side opportunities are given limited attention in forecasts.
- The Energy Security Board was charged with long-term energy market policy reform arising from the Finkel Review, as well as playing a limited coordination function; however the ESB is being replaced by an Energy Advisory Panel.
- Energy Ministers retain primary responsibility for long-term policy, supported by departmental resources in each jurisdiction.
- An emerging range of other jurisdictional bodies are influencing energy system development, including the NSW Consumer Trustee (delivered by an offshoot of AEMO), VicGrid, CleanCo Queensland and the Federal Rewiring the Nation initiative, which further play a role in planning and enabling network development.
- Private and public transmission network service providers (TNSPs) in each jurisdiction conduct their own planning and advocacy processes.
- Energy Consumers Australia is charged with representing the interest of consumers in the market.

What’s the problem?

Long-term network planning is ultimately the result of the actions of hundreds of individual network stakeholders, investors and operators, guided by forecasts provided by AEMO. A lack of a holistic system planning function means that opportunities that could arise from coordinated action and coordinated exploitation of demand-side initiatives are not considered or implemented. To an extent, state governments have attempted to fill this gap by developing renewable energy development plans within their jurisdiction. However, this risks ignoring system-wide benefits that could occur with system-wide planning.

Consultation questions:

4. What are your views on optimal energy system planning that integrates demand and supply holistically?
5. What potential barriers and opportunities exist to creating a comprehensive, coordinated network planning function?

3.3 Energy law

The legal framework for national energy markets do not drive visibility, consideration or development of demand-side measures in energy markets, as they primarily consider energy supply. Energy demand is largely considered from a consumer protection perspective. Several areas of the national energy law framework could be reformed to better facilitate demand-side participation.

3.3.1 The National Energy Objectives

The National Energy Objectives are derived from the three national energy laws. They are:

- **Electricity:** “the objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:
 1. price, quality, safety, reliability, and security of supply of electricity; and
 2. the reliability, safety and security of the national electricity system.”
- **Gas:** “the objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.”
- **Retail:** “the objective of this Law is to promote efficient investment in, and efficient operation and use of, energy services for the long term interests of consumers of energy with respect to price, quality, safety, reliability and security of supply of energy”

The objectives emphasise *price*, rather than cost of energy to the consumer (i.e. the size of the energy bill). While these terms may seem synonymous, there is a significant difference between them. The *price* of energy services is the way by which the *costs* of providing energy services (including infrastructure, operating costs and profit) are recovered from consumers. The *cost* of energy to the consumer reflects the resources required to deliver services to consumers and the volume of energy used by the consumer to meet their needs.

Promoting energy market supply competition – a core function of the energy market framework – seeks to align price with costs as far as possible but does not always seek to lower costs. This is particularly so where monopolies exist – such as those in transmission and distribution.

The Australian Energy Market Commission uses the objectives to guide its rule-making in the national markets. The Commission provides [guidance](#) on how it applies the objectives, which describes a process consistent with orthodox Australian economic regulation philosophy: that market signals are preferable to regulation; that regulation may be necessary in the case of market failure; that consumers should have options in the way they use energy; technology and business model neutrality, and that risks are best allocated to those best placed to manage them.

The Commission's guidance aspires that competition will ensure that prices and costs are as close as possible. The Commission's guidance further notes its preference of *price* rather than other terms like *affordability*, that can have more subjective meanings. Further, the emphasis of the AEMC's guidance it is almost strictly on the supply side – '*consider[ing] what happens at the customer side of the electricity or gas meter*' is mentioned only briefly in the guidance.

What's the problem?

The NEO's focus on *price*, rather than total *cost to the consumer*, risks focusing regulatory decisions narrowly on the unit cost of energy, rather than optimising total system cost and reducing bill size. Demand-side measures can have significant downward impacts on system *cost and bill size*, but may not necessarily lower energy unit *price*. If the objectives emphasised the long-term interest of consumers with respect to *cost*, demand-side measures could play a greater role in reducing the cost of providing energy services, and lower energy bills.

The NEOs also make no mention of equity between consumers, and the AEMC's guidance does not make particular mention of consumers with differing levels of information, resources, and agency in the market. As the energy transition progresses, it will be particularly important that regulatory decisions, market structures and behaviour do not place significant cost burdens on those least able to bear them and increase energy inequality.

3.3.2 The regulatory investment tests

The RIT-T and RIT-D are economic regulatory approvals that transmission and distribution network service providers must receive prior to commencing network augmentation or replacement projects with a value of more than \$6m. These tests are cost-benefit analyses to ensure that the most economically efficient solution to a network problem is chosen.

However, RIT-T and RIT-D proposals are written and advanced by project proponents. While there is a requirement for proponents to consider non-network options prior to progressing with the RIT, there is no incentive for such businesses (or the regulator) to systematically identify demand-side options prior to conducting the cost benefit analysis.

The RIT-T and RIT-D processes do involve industry consultation, in which alternatives to the proposed incentives may be identified, and the draft Integrated System Plan must also look for non-network options in the case of actionable transmission projects. However, identification of non-network options is largely dependent on the actions of others, who may have no business incentive to identify alternative solutions. Additionally, due to the lack of overall demand-side coordination and policy development mechanisms, the economic regulator has limited visibility of potential demand-side solutions that could avoid additional network investment.

What's the problem?

The RIT-T and RIT-D are intended to function as gatekeepers on investment decisions, to prevent runaway escalation of the regulated asset base of transmission and distribution network service providers. However, as there are no incentives or resources to comprehensively investigate options that would diminish the need for network investment (demand-side measures), the RITs make decisions on the basis of incomplete information, and do not fulfil their aim.

3.3.3 The rule-making process

Under the national energy laws, the AEMC sets the market rules. Market rule changes can be proposed by anyone, which theoretically means that demand-side initiatives should be considered equally to supply-side initiatives. However, while the AEMC does not intend for technical knowledge to be a barrier to proposing a rule change, using this vehicle as an effective avenue to drive reform and change in the energy market does require a high level of knowledge about the functioning of the energy market. While supply-side businesses are likely to have this knowledge and expertise available to them (and a commercial interest in rule changes), demand-side businesses and stakeholders are less likely to have the deep engagement with the market and associated rules to successfully prosecute potential rule changes.

What's the problem?

Energy market rules determine how energy markets function, and how costs will be allocated. There are few voices in the energy market that have the expertise, motivation and resources to prosecute rule changes that are in the direct interests of consumers, or to advance demand-side measures.

Consultation questions:

6. What reforms to national energy market legal frameworks would better drive attention on the contribution of demand-side investment?
7. Are the national energy objectives and regulatory investment tests fit for purpose to drive an integrated clean energy transition?
8. How can energy law promote equity among energy users, and safeguard the interests of the most vulnerable energy users?
9. How could energy market rule-making be improved to better facilitate demand-side participation in energy markets?

3.4 Demand-side participation mechanisms

In the NEM, there are limited means by which end-users can effect two-way participation in the market. These include:

- The Wholesale Demand Response Mechanism;
- Virtual power plants;
- Export of surplus behind-the-meter energy generation (PV);
- State and territory energy efficiency schemes, and
- Energy management to optimise usage and/or network charges, such as demand management/flexibility.

While these schemes exist, consumers (particularly smaller consumers) are largely price-takers in the energy market and cannot effectively bargain with energy providers. Similarly, significant portions of a small consumer's energy bill are outside the realms of competition (the network components) and are set through a regulated process. Individual consumers can participate in the market through aggregators, however there is a limited range of methods by which this can occur (principally through virtual power plants). Where they exist, state and territory energy efficiency schemes help ameliorate this market imbalance, but their coverage is not universal, and their existence is outside of the core national energy market frameworks.

What's the problem?

Poor or ineffective two-way participation in energy markets means that energy users may not be able to fully capture the benefits of investment in energy efficiency or other demand-side measures. For example, investment in energy efficiency measures may be undermined by increasing regulated network costs. Better mechanisms to enable two-way energy user participation in the market would unlock greater demand-side opportunities. Current two-way participation is subject to high barriers to entry for both consumers and aggregators. Incumbent market participants have little incentive to lower barriers to demand-side participation, nor to facilitate innovation that would do so. Inability for energy users to fully participate in energy markets creates additional barriers to the market properly valuing demand-side activities and realising that value.

Consultation questions:

10. How could market be reformed to better encourage, facilitate and value demand-side participation?
11. What opportunities for demand-side participation are currently unable to be realised, and why?
12. What mechanisms could drive better involvement of both engaged consumers (often called prosumers) and consumers with little engagement with the energy market?

3.5 Consumer voice

Consumers and other energy users are represented by a number of different groups in the national energy markets. However, the voices representing consumers – particularly small consumers – are limited in scope and poorly resourced compared to energy companies and the voices representing the supply side of the energy market.

Although it is not the intention, existing market frameworks and governance largely ignore consumer participation. While all three market bodies have mechanisms for consumer consultation, only one director of the AER, AEMO or AEMC has identified expertise involving consumer issues. The balance of energy market body corporate leaders are former energy industry executives, business executives, public service executives or lawyers. While these leaders provide valuable expertise, there is a clear gap in systemically driving the activities of these bodies towards the evolving interests of consumers, who are likely to benefit most from expanding demand-side measures in energy market. In addition to greater representation within market bodies, more resources are needed to support greater numbers and diversity of consumer representation in energy market decision making processes, and facilitate genuine consultation with a diversity of energy users.

What's the problem?

Energy markets are intended to serve the long-term interests of consumers through promoting economically efficient investment decisions. However, the corporate governance of industry bodies does not place consumers at the centre. This means that the bodies that are responsible for the development, regulation and operation of energy markets cannot fully incorporate the interests of consumers into their decision making.

Consultation questions:

13. How could the voice of consumers be better heard at all levels of the energy system?
14. What barriers exist to greater participation of consumers in energy system decision making?
15. Is there an optimal level of demand- and supply-side expertise in governance of energy market bodies?

4 International demand-side governance mechanisms

Internationally, there are strong examples of jurisdictions that have recognised the need to have a strong framework to promote demand-side market participation. Lessons could be learned from these examples for application in Australia.

4.1 New Zealand – Energy Efficiency and Conservation Authority (EECA)

The EECA is established under the Energy Efficiency and Conservation Act 2000 to encourage, promote and support energy efficiency, energy conservation and the use of renewable sources of energy. The EECA's role combines advisory, grants and regulatory functions:

- Creating and maintaining a National Energy Efficiency and Conservation strategy, that must include the Government's policies in energy efficiency and renewable energy, the 'objectives to be pursued' to achieve those policies, targets to achieve those policies that are 'measurable, reasonable, practicable and considered appropriate by the Minister', and the means by which targets are to be achieved.
- EECA is also able to make grants and/or loans, and is presently making grants for decarbonisation across residential, government and industry.
- EECA is also the regulator for product and vehicle efficiency standards (E3) etc.

Energy system operation, planning and regulation is undertaken by others:

- The Electricity Authority is responsible for system planning (including the transition to 100% renewables), sets the market rules (Electricity Industry Participation Code), promotes consumer competition and choice, as well as regulates compliance with the code. (This combines some functions of the AEMC, AER and AEMO).
- The system operator (Transgrid) both owns the transmission grid and operates the system on a day to day basis.
- The Commerce Commission regulates electricity distribution businesses.

The existence of the EECA provides a clear focus point in energy policy for the demand side of the energy system. This helps ensure that demand-side measures are a clear part of New Zealand's energy policy in residential, commercial and industrial settings.

4.2 California – California Energy Commission

There are three principal market bodies in the California energy system.

The California Energy Commission (CEC), which is the state's primary energy policy and planning agency and has seven core responsibilities that guide the agency:

- Forecasting electricity and natural gas demand to ensure adequate supplies are developed.
- Promoting energy efficiency and conservation by setting the state's appliance and building energy efficiency standards.
- Investing in energy innovation that advances energy science and technology through research, development, and demonstration projects.
- Developing renewable energy resources.

- Advancing alternative and renewable transportation fuels, vehicles, and technologies.
- Certifying thermal power plants 50 megawatts and larger.
- Planning for and directing state response to energy emergencies.

A real strength of the CEC is that it has explicit responsibilities in both supply-side and demand-side energy system planning, as well as relevant policy levers. Its role as a creator of energy efficiency standards gives it strong visibility of energy demand, as well as the energy supply landscape. Combining these functions into one body provides a strong platform for holistic, optimised energy system planning.

The other market bodies are the California Public Utilities Commission, which regulates electricity and gas utility companies and acts as the economic regulator in the market, and the California Independent System Operator, which owns and operates most of the transmission system, as well as operating the wholesale market.

4.3 Ireland – Sustainable Energy Authority of Ireland (SEAI)

The SEAI is established as a governmental agency with the functions of promoting and assisting ‘environmentally and economically sustainable production, supply and use of energy’, energy efficiency and renewable energy, minimising the environmental impact of energy production and supply, promoting and assisting related R&D, as well as advising the Minister and other users.

The SEAI is largely an advisory and promotion body, rather than a body with regulatory or planning functions.

- EirGrid operates the transmission network and acts as system operator. EirGrid also undertakes some system planning and development work, although primary responsibility for long-term planning rests with government.
- The Commission for Regulation of Utilities provides consumer regulation, as well as network licencing, regulation and market rule setting.

While SEAI’s functions are advisory in nature, it helps to lift the visibility of demand-side measures.

4.4 New York – New York State Energy Research and Development Authority (NYSERDA)

The NYSERDA is a semi-governmental agency devoted to increasing energy efficiency, saving money, using renewable energy, and reducing New York State’s reliance on fossil fuels. The authority’s responsibilities are:

- Overseeing an energy and environmental R&D program;
- Providing assistance to homes and businesses to implement energy efficiency and energy affordability measures;
- Advice and analysis to guide energy market decisions;
- Energy efficiency financing; and
- Managing nuclear energy matters.

NYSERDA has a limited role in regulation and system planning, but does undertake some functions such as procuring and financing large renewable energy projects.

Other New York energy bodies include the New York Power Authority which operates substantial amounts of generation and transmission lines, and the Public Service Commission which regulates consumer-facing utilities. NYSERDA helps drive attention towards demand-side measures, but its role is more limited than in some other international examples.

Consultation questions:

16. Are there other international examples that could provide lessons on integrating the demand side of the energy system more effectively?
17. Do you have views on a preferred mechanism to effectively plan, promote and coordinate demand side policy and action in Australia?

5 Takeaways

The authors consider there are several key takeaways from consideration of demand side governance in the Australian energy context:

- The legal framework for national energy markets does not encourage, promote or adequately value demand-side activities.
- The frameworks that govern national energy markets lack systems, resources, information and processes to evaluate the optimal mix of demand-side and supply side measures.
- Consumers are inadequately represented in energy market design, regulation and operation.
- There is a lack of a functional 'demand-side advocate' in the energy system that can prosecute the case for demand-side measures on equal footing with supply-side interests.
- There is a lack of systemic, coordinated capacity to develop and implement energy efficiency and demand-side policies.
- The lack of a single, empowered point of planning and coordination for energy network and market development means that demand-side opportunities and policies are insufficiently developed and prosecuted.

Feedback on these propositions, and any other matter raised in this paper, is welcomed.

Responding to this discussion paper and next steps

The discussion paper authors will be delighted to accept comments on this discussion paper by 11 August 2023. Feedback on the questions can be directed to alex.stjohn@eec.org.au.

- Feedback on this paper will be collated and considered for revision.
- Further discussion and feedback will be explored with formal and informal consultation events throughout the year.
- Recommendations will be presented to governments later this year.