Promoting innovation for NSW energy customers

Public consultation paper

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More information

This consultation paper was prepared by the Consumers and Competition Policy Branch within the Energy Division.

Acknowledgment of Country

The Department of Planning, Industry and Environment acknowledges the Traditional Owners and Custodians of the land on which we live and work and pays respect to Elders past, present and future.

Contents

Shortened forms

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASP	Accredited Service Provider
CCEW	Certificate of Compliance for Electrical Work
CDR	Consumer Data Right
CER	Clean Energy Regulator
DER	distributed energy resources
DNSP	distribution network service provider
ESB	Energy Security Board
EV	electric vehicles
EWON	Energy and Water Ombudsman NSW
IPART	Independent Pricing and Regulatory Tribunal
kW	kilowatt
kWh	kilowatt hour
LGC	large-scale generation certificate
LSR	Life Support Rebate
MJ	megajoules
MSATS	Market Settlement and Transfer Solutions
MW	megawatt
NECF	National Energy Consumer Framework
NEM	National Electricity Market
NER	National Electricity Rules
NERL	National Energy Retail Law
NERR	National Energy Retail Rules
RAB	regulated asset base
RET	Renewable Energy Target
SAPS	stand-alone power system
Solar PV	solar photovoltaic
SSP	SAPS settlement price
STC	small-scale technology certificate
WICA	*Water Industry Competition Act 2006*

Introduction

The energy sector is currently undergoing a significant transformation. Emerging smart technologies are enabling new products and services and changing the way customers participate in the electricity market. A key priority for the NSW Government is delivering an energy system that puts the customer at the centre of policy and program design, while delivering an affordable and reliable energy future that helps achieve net zero emissions by 2050.

The NSW Government understands there are a range of regulatory and non-regulatory barriers being experienced by customers and industry, delaying the realisation of the full benefits of the transformation of the energy sector. Through this consultation paper, the NSW Government is seeking stakeholder views on some of these barriers, and how they can be addressed. This will help better understand the cooperation needed as well as the role of government and stakeholders to help smooth the energy transition.

The aim of the consultation paper is to identify reforms to improve customer access to and uptake of new energy technologies and innovation. This includes smart meters, solar photovoltaic (PV), inverters, batteries, electric vehicle (EV) charging infrastructure, flexible demand management and virtual power plant services. It will also explore improvements to energy customers' digital journey and their interaction with the NSW Government, to enable government to lead the way to improve customer protections, experience and engagement.

The immense change occurring across the energy sector provides an opportunity to review the current regulatory tools and frameworks to ensure they are fit for purpose to meet the emerging needs of NSW customers and the energy industry. The responses received to this consultation paper will be used to inform the ongoing work program and reform priorities of the Department of Planning, Industry and Environment (the Department).

Complementary reviews and reforms

The consultation paper does not seek to duplicate the work of national reform processes and ongoing NSW-specific reforms. Instead, the NSW Government is seeking to understand stakeholders' perspectives on issues in New South Wales, as well as some issues the NSW Government could advocate for through national reform processes.

The NSW Government is conscious a broad range of national reform activities are being progressed or planned, which this consultation process will work alongside. These activities include:

1. The Energy Security Board's Post-2025 Market Design work on unlocking the value of flexible demand and distributed energy resources (DER) is working alongside government schemes delivering policy commitments including emissions reduction and providing clear signals for timely and efficient investment to deliver reliable, secure and affordable electricity for consumers.
2. The Energy Security Board's Data Strategy is working to manage the changing data needs in the energy transition and optimise the long-term interests of consumers in a digitalised future.
3. The national Consumer Data Right for the energy sector is establishing the ability for consumers to have access to and control over their energy data.
4. The Australian Energy Market Commission's (AEMC) review of the regulatory framework for metering services is seeking to understand whether the AEMC's previous competition in metering reforms met expectations and whether changes are required to the national regulatory framework for metering services (AEMC 2021).
5. The AEMC's rule change process for access, pricing, and incentive arrangements for DER aims to integrate DER more efficiently into the electricity grid, while enabling benefits to accrue to all electricity system users.

6. The AEMC's work on *Updating the Regulatory Frameworks for Embedded Networks* proposes a new regulatory framework for embedded electricity networks to address the limited access of embedded network customers to competitive prices and important consumer protections. This regulatory framework is currently the subject of National Energy Ministers' consideration.
7. The AEMC's reviews of the regulatory frameworks for stand-alone power systems are intended to recommend a regulatory framework that supports the use of stand-alone power systems as an economically efficient alternative to standard grid connection.

In addition, there are notable NSW-specific consultation processes that are ongoing and concurrent to this consultation process:

1. The workplan on DER will inform the Department's future work program and plans to support DER in New South Wales.
2. The review of the NSW Social Programs for Energy Code is looking at updating and amending the Code to reflect current practices, provide greater clarity and improve social program delivery and customer outcomes.
3. The statutory review of the *Strata Schemes Management Act 2015* (NSW) is reviewing feedback on how the laws are working, including the effectiveness of the strata renewal process, regulation of mixed-use developments, and valuation of unit entitlements.
4. The ongoing implementation of the NSW Government's Electricity Infrastructure Roadmap.
5. A review is underway of the network devices metering providers can safely operate as part of the smart meter installation process.

Call for submissions

The Department invites submissions from interested parties on the questions set out in this paper. Stakeholders are encouraged to provide evidence to support claims where possible.

Stakeholders can fill in and return the submission form on the Have Your Say website. Please email your submission form to energy.consumerpolicy@dpie.nsw.gov.au with '**Your Name / Company Name – Enabling the Transformation of the Energy Sector Paper Submission'** in the subject line.

Please state if you wish for your submission to remain confidential.

The Department is committed to an open and transparent process, and all survey responses and submissions will be made publicly available except those requested to be kept confidential. The Department will redact personal details from submissions made by individuals to protect personal information. In particular, if a submission author regards any content of their submission as revealing protectable corporate intellectual property, they should clearly note and define this in their submission. In the absence of an explicit declaration to the contrary, the Department will assume that information provided by respondents is not considered intellectual property of the respondent. Written submissions should be provided as documents that can be published on the Department's website.

The Department may disclose confidential information provided to:

- the NSW Minister for Energy and Environment or Minister's Office
- the NSW Ombudsman, Audit Office of NSW or as may be otherwise required for the auditing purposes or Parliamentary accountability
- directly relevant departmental staff, consultants and advisors
- the Australian Energy Market Operator (AEMO), Energy Security Board (ESB), Australian Energy Market Commission (AEMC), Australian Energy Regulator (AER) or the Australian Competition and Consumer Commission (ACCC)
- other parties where authorised or required by law to be disclosed.

Where the Department discloses information to any of these parties, it will inform them that the information is strictly confidential.

The Department may publish or reference aggregated findings from the consultation process in an anonymised way that does not disclose confidential information.

Part 1: Digital energy technologies

Smart electricity meters

In March 2016, NSW Parliament passed new laws to adopt the national 'Power of Choice' competition in metering reforms. The laws commenced in December 2017 and require all new and replacement electricity meters to be a smart meter (also known as a digital, advanced, type 4 or type 4A meter).

Smart meters provide a range of benefits to customers including access to real-time energy usage data and time-of-use pricing as well as the ability to feed in excess solar generated to the electricity grid. On 1 October 2021, Five-Minute Settlement (5MS) commenced in the National Electricity Market (NEM), aligning operational dispatch and financial settlement at five minutes in accordance with the AEMC's 5MS rule. This enables customers to better manage their electricity usage, allows electricity retailers to provide customers with access to time-of-use pricing and enables electricity distributors to have more visibility during high demand periods.

Smart meters are also an enabling technology needed to ensure customers can make best use of other energy technologies including hot water systems, pool pumps, solar, batteries, electric vehicle charging infrastructure and demand response. Data from smart meters can be used by other technologies such as smart inverters, in-home energy usage displays and apps, as well as virtual power plants, to help customers better manage their electricity consumption and pricing. Smart meters can also play an important role in improving household electrical safety, with the potential for real-time detection of neutral integrity and reverse polarity electrical faults. Real-time data from smart meters will also be an increasingly important tool for distributors to monitor and manage the grid as generation assets retire and variable renewable generation sources increase both at a large-scale and a customer-scale.

Unlocking real-time data from smart meters will also support lower investment requirements from distributors and create system efficiencies that benefit all customers and energy market participants. Customers can partner with retailers or potential third-party providers to exchange their flexibility for cheaper supply and ultimately, customers can then be rewarded for contributing to system security.

The NSW Government will continue to work closely with the AEMC on its review of the regulatory framework for metering services. Stakeholder submissions to the smart meter section of this paper will be shared with the AEMC to ensure these issues will be considered in the progression of the AEMC's review.

Issue 1: Meter costs to customers

The NSW Government understands that a standard smart meter costs approximately $100–$300 and smart meter services (including meter readings) cost $100–$300 per annum, per customer.

Correspondence sent by customers to the NSW Government noted several cases where customers were concerned with the cost of their smart meter and the lack of information to compare costs between energy retailers. This highlighted a challenge for customers to make an informed choice when installing a smart meter and selecting a competitive retail market offer.

There is a lack of consistent, transparent and publicly available information about the cost of a smart meter and associated services to the end-user customer. Energy retailers take different approaches to passing on the cost of a smart meter. For example, sometimes the cost is directly passed on when the smart meter is installed, or it could be absorbed as part of the customer's electricity contract and therefore this cost is hidden.

When a new smart meter is installed, this allows for greater flexibility in tariff options. These tariff options are typically referred to as time-of-use tariffs. Time-of-use pricing reflects the value of the

electricity supplied when it is supplied and can reward customers for changing their consumption profile for the benefit of the electricity system. However, this option may or may not be beneficial to the customer if most of their electricity use is in peak time and their ability to change the way they use electricity remains largely inflexible. Moving to a cost reflective tariff could result in higher bills. In some cases, the retailer may not make any changes to the existing plan and tariff rates until the contract term ends. These issues are often not made clear or well understood by customers, limiting their ability to make an informed choice.

The Commonwealth Government's Energy Made Easy price comparison service allows customers to compare electricity retailer plans and packages. These retail plans and packages often indicate if a smart meter is included as part of the package; however, the cost of the smart meter is not indicated making it difficult for customers to compare plans.

Potential options to address this issue:

1. Work with National Energy Ministers to amend the AER's Retail Pricing Information Guidelines to ensure electricity retailers present the cost of smart meters on residential and small business electricity plans on their website. This would be similar to the conditions required of market offers under Section 37 of the National Energy Retail Law (NERL).
2. Work with the AER to display costs of smart meters on Energy Made Easy for customers to be able to easily compare costs.
3. Introduce pricing guidelines for smart meter installations and potential meter board modification costs to assist in reducing bill shock, particularly for vulnerable households. This could be explored for New South Wales or nationally.

Issue 1 consultation questions

1a. How are the costs and benefits of smart meter installations currently communicated to customers?

1b. Can electricity retailers provide government with the various cost inputs for smart meters (this information will be treated as commercial in confidence)?

1c. Would it be useful for customers if the cost of a smart meter was included on the details of electricity plans on comparison sites?

1d. What share of customers in New South Wales are on cost reflective pricing tariff options?

1e. What are the benefits and challenges for customers moving onto cost reflective tariffs?

1f. Are there any other costs to customers that should be considered?

Issue 2: Meter life and redundancy charges

There is limited information and transparency about the life expectancy of basic meters and smart meters. Prior to national 'Power of Choice' competition in metering reforms, electricity distributors were responsible for small customer metering services. Under the National Electricity Rules (NER), distributor investment in metering assets is included in the current regulatory asset base. This means distributors can recover the costs from customers for these metering assets over their economic life (usually 20–30 years) in network charges via a customer's electricity bill.

As at September 2021, there are over 4.3 million basic meters installed in New South Wales. Customers can make requests to their retailer for a smart meter; however, when a retailer arranges to replace the meter before it reaches its end of life, it must pay the distributor for the remaining life of the basic meter asset. The cost of replacing the basic meter may be incorporated into the supply

charges component of the customer's retail bill. The cost may be spread over a pre-determined period (around 10–15 years).

Meters can be replaced earlier in instances where the customer informs the retailer that the meter is damaged, faulty or requires a battery replacement. Retailers can also advise customers that their meter needs to be replaced if the distributor informs of a 'family failure'; that is, where a routine test of meters found an unacceptably high rate of meters not meeting the Australian Standards and the whole population of that meter model is retired.

It can be a disincentive for retailers to actively replace basic meters with smart meters due to requirements for paying out the basic meter to the distributor and administrative costs to install the new smart meter. These costs are ultimately passed on to the customer either directly or indirectly.

There is an opportunity for New South Wales to review the rules and requirements around meter life to ensure they align with actual meter life and community expectations about the technology. This would provide evidence to support changing the approach to the treatment of depreciation for metering assets that have not been fully paid for, and how distributors can charge customers in the next round of NSW electricity distribution regulatory resets.

Mandating a shorter meter life would accelerate the rollout of smart meters. In contrast to a general smart target, where retailers choose the customers to provide smart meters to, the government could consider an approach where the focus for replacement is on the oldest meters.

Figure 1 estimates how many basic meters over 25 years old remain installed and in use by customers in New South Wales. The graphic further breaks down the numbers by meter age. For example, in the Ausgrid network, there are 624,000 meters that are more than 25 years old, and more than 200,000 are older than 40 years (Intellihub 2020, p.9).

If all basic meters over 25 years old in New South Wales are replaced with a new smart meter, this could mean around one million new smart meters would be installed in a short period.

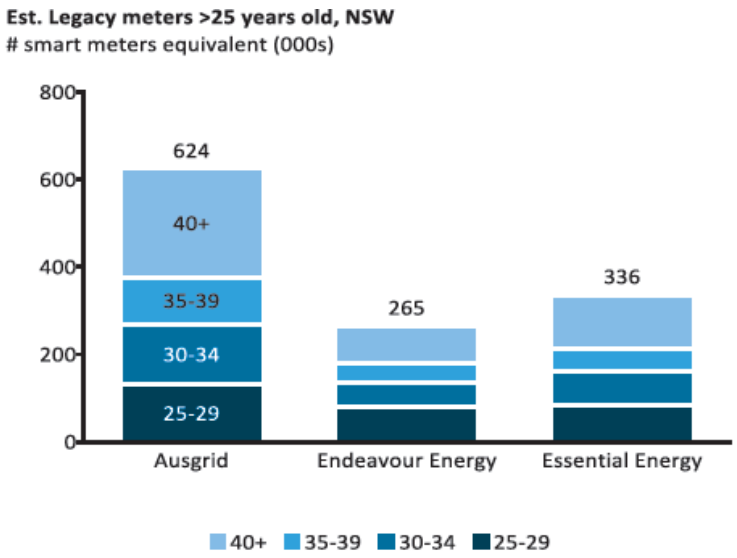

Figure 1 Estimated numbers of basic meters over 25 years old in use in New South Wales

Source: Intellihub (2020), p.9.

In relation to smart meters installed in New South Wales today, metering providers have indicated they could last between 15 and 20 years. However, rapid changes in technology could mean that a smart meter with an expected product or economic life of 10–15 years would need replacing earlier. For example, depending on the meter, a smart meter installed with 3G communication may need to be retired when the 3G network is switched off if it is not possible for components to be replaced.

Potential options to address this issue:

1. Mandate a retirement age of basic meters and propose that the AER reconsider the depreciation approach for unrecovered meter assets in the next round of electricity distribution regulatory resets.
2. Require distributors to notify relevant parties (such as the meter manufacturer or other distributors) when a 'family failure' is identified in a meter population. This will remove duplicative testing and ensure retired meter populations are consistent across networks.

Issue 2 consultation questions

2a. What is the average life expectancy of basic meters and smart meters?

2b. What are the main operating factors that affect the life expectancy of smart meters?

2c. What is the average cost to a retailer of replacing a distributor's basic meter asset before it reaches its end of life?

2d. What are the factors to be considered before mandating end of life for basic meters?

2e. What are the main challenges to replacing basic meters or smart meters that reach their end of life?

2f. What measures should be included to protect vulnerable customers if their meter needs to be replaced? Would exemptions need to be included to account for implementation challenges at some premises?

Issue 3: Solar connection delays

The NSW Government is aware that some solar customers are experiencing significant delays to their smart meter installation when required for the use of their solar panels. Some of the key issues reported include miscommunication or lack of communication to customers; inconsistencies in whether third parties can act on behalf of customers; and a perceived lack of motivation to reduce the delays experienced.

A smart meter is required to support solar systems to allow customers to accurately record the excess electricity generated by the solar system that is exported back to the grid. If a solar system is connected to a basic meter instead of a smart meter this means there is no accurate record of the excess electricity exported, and customers are unable to take full advantage of the cost savings from their investment into solar.

Under the National Energy Retail Rules (NERR), retailers are required to install smart meters within six business days for a new connection, or within 15 business days of a customer's request, unless another date is agreed with the customer. However, internal processes of electricity retailers and metering providers have been reported to have created barriers to meeting these obligations and reduce the ability of customers to ensure no extra costs are incurred.

In August 2020, the Department requested further information from electricity retailers on the causes of installation delays of smart meters. Eleven electricity retailers responded to the request. On the whole, retailers pointed towards the current allocation of responsibilities within metering and the coordination of planned interruption notifications as significant barriers to installing smart meters on time.

Potential options to address this issue:

1. Allow for third parties to request a meter installation on behalf of a customer, with the customer's consent.

2. Advocate for clear role responsibilities in the smart meter installation process as part of the national AEMC metering review to ensure consistency for all customers.

These options may require changes to the NER and/or the NERR.

Issue 3 consultation questions

3a. Are the current installation timeframes, and the measures to monitor compliance with those timeframes, that are required under the national rules appropriate?

3b. Are you aware of any regulatory or non-regulatory barriers that may be contributing to delays in the installation of smart meters?

3c. What additional measures would need to be implemented to unlock these customer benefits?

3d. Are there any benefits for customers to allowing third parties to be able to manage the installation of a smart meter on their behalf?

Issue 4: Meter board upgrades

Approximately 10% of customers require their meter board to be upgraded or replaced by an Accredited Service Provider (ASP) before a new smart meter can be installed by a metering provider. Reasons for meter board replacement include the board being too small to fit a smart meter, as they are larger than basic meters.

The need to upgrade the meter board is more common in older houses and apartment buildings. Meter board upgrades in apartment buildings are more complex, as the meter board is shared among several premises, multiple meters are installed on the one meter board, and multiple retailers may be responsible for the meters. If the meter board is too small and cannot accommodate the number of meters within the building, the strata manager must agree to upgrade before new smart meters can be installed. In some cases, a new meter room may need to be built.

Customers may not be aware of the need to replace their meter board until the metering provider has attended the site and viewed the meter board. If a meter board upgrade or replacement is required, the customer will be required to arrange and pay an ASP Level 2 technician to undertake this electrical work before the new meter can be installed.

In apartment buildings, the owners' corporation will need to contact the electricity distributor to arrange an ASP Level 2 technician to undertake the work. The ASP may then need to seek approval from the distributor to remount the existing meters onto the new meter board, to avoid having to arrange a metering provider to install the new smart meters as soon as the old meters are removed. This can cause delays in meter board replacements and is an unnecessary barrier for ASPs to do their work.

The cost to the customer to replace a board at a house can be in the range of $1,000–$2,000. The cost in multi-occupancy dwellings (such as apartment buildings and townhouses) can cost each customer $1800–$12,000 depending on the board size and complexity (AEMC 2020b, p.45).

Upgrading the meter board may cause delays to meter installation and solar usage and result in additional unplanned costs, particularly for those customers requiring a smart meter to support other sustainability infrastructure investments such as solar.

Potential options to address this issue:

1. Consult with National Energy Ministers to amend laws and rules to ensure:

   a. if it is safe to do so, customers or their agent may submit a photo of their electricity meter board to their electricity retailer to enable the metering provider to make a preliminary assessment of whether a meter board upgrade is required before attending the site
   b. metering providers that attend a meter board, particularly in multi-occupancy dwellings (such as apartments and townhouses), can record and report the state of the meter board via an approved process (such as inclusion in the database supporting Market Settlement and Transfer Solutions (MSAT) or other).
2. Distributors to provide ASPs with blanket approval to re-mount old meters on new meter boards in apartment buildings, rather than owners' corporations having to seek permission from their distribution network service provider (DNSP).
3. The Department is working with the Department of Customer Service as part of the review of the *Strata Schemes Management Act 2015* to require owners' corporations to consider meter board upgrades as part of their 10-year Capital Works Fund Plan.

Issue 4 consultation questions

4a. Should there be a requirement to replace meter boards that are older than a specified age (e.g. 30 years) as a prerequisite to installing a smart meter?

4b. What challenges would prevent electricity retailers and metering providers from offering a meter board survey service to customers before a smart meter is installed?

4c. If a meter board survey service can be provided, how much should customers pay for the service? Can the service be offered for free?

4d. Should electricity retailers and/or metering providers receive a report on the state of a customer's meter board? If not, why?

4e. What are the challenges to using an existing platform to enable metering providers to register and share the state of a customer's meter board with other energy market participants?

4f. Are these options suitable for customers in regional and rural areas, or are there other options that should be considered to meet the needs of these customers?

4g. What is the best way to provide customers, solar panel installers and electricity retailers with information about meter board upgrades?

Issue 5: Sample meters

The AEMO metrology procedures require each of the NSW electricity distributors to maintain 200 sample meters at residential and small business customer sites to collect energy usage data. A sample meter is a separate metering device installed on a customer's meter board at nominated sites that have a basic meter and controlled load appliances (i.e. electric hot water heating and pool pumps).

The data from sample meters is used to compile a representative usage profile of controlled load for small customers. This controlled load profile is used by AEMO for its market settlement process.

The national 'Power of Choice' competition in metering reforms removed the distributor's role of installing electricity meters for small customers. Consequently, retaining the obligation for distributors to maintain a fleet of sample meters for controlled load profiles does not fit with their revised responsibilities. When a retailer installs a smart meter at a premise with an installed sample meter, this site can no longer be used for controlled load data collection, and the sample

meter is often removed. To comply with the AEMO metrology requirements, the distributor must identify another suitable site to install a sample meter.

Distributors usually install a few spare sample meters (around 10–15) to ensure compliance with the requirements; however, the Department understands distributors are finding that sample meters are being removed by metering providers or customers. Distributors are therefore finding it increasingly difficult and costly to comply with this requirement.

Over the last two years, smart meters have been replacing basic meters at a rate of over 19,000 each month. As a result, the volume of unmetered loads that needs to be reconciled is reducing. Data collected from smart meter data is providing more accurate information about energy usage throughout the day.

The need for sample meters may be limited as it is understood that controlled loads in New South Wales are operating with a degree of consistency across all 48 half-hour intervals of the day, while the prevalence of smart meters provides a possible alternative source for controlled load data. Additionally, there does not appear to be any correlation between controlled load operation and the prevailing spot price for energy that would warrant a separate profile.

Potential options to address this issue:

1. Amend AEMO's metrology procedures to remove the controlled load profiles requirement completely – removing the need for sample meters.
2. Amend AEMO's metrology procedures to retain the controlled load profiles requirement for settlement purposes but instead utilise historical profiles – removing the need for sample meters.
3. Retain the controlled load profiles requirement and collect data for profiles from smart meters – removing the need for sample meters. Enabling this option will require change to the NER and changes to the metrology procedures.

Issue 5 consultation questions

5a. Are there broader benefits (beyond the financial settlements process) to retaining controlled load profiles in New South Wales?

5b. Are the costs to enable smart meters to determine the controlled load profiles less than the benefits from the information?

5c. What alternative options should be considered?

Issue 6: Consumer protections for remote vs manual re-energisation and de-energisation

The NERR set out several consumer protections for the manual re-energisation and de-energisation of a premises. Manual re-energisation and de-energisation involves a metering provider physically attending a customer's premises to undertake the manual services. Remote services can be carried out by a DNSP without having someone visit the premises that is to be re-energised or de-energised. It is currently unclear whether the consumer protections that apply when a manual re-energisation and de-energisation of a premises is carried out also apply when remote services are utilised.

There is an opportunity to align consumer protections currently provided under the regulation of manual re-energisation and de-energisation services with remote services to ensure positive outcomes for customers are maintained despite which service they receive.

Table 1 Regulatory gaps in obligations for remote and manual re-energisation and de-energisation

Existing DNSPs obligations	Regulatory gap
National Energy Retail Rule (NERR) 80(1)(c) prescribes that DNSPs must publish de-energisation and re-energisation timeframes on their website.	Retailers are not required to publish their metering providers' timeframes for remote re-energisation. In addition, neither distributors nor retailers are required to publish timeframes for manual or remote de-energisation.
NERR 103(1) & (2) prescribes that if DNSPs refuse a retailer's de-energisation request, they must notify the retailer promptly.	Metering providers are not required to notify retailers of a refusal to de-energise a customer's premises at the retailer's request (e.g. due to life support, Energy and Water Ombudsman NSW (EWON) complaint, outside protected period).
NERR 105(1)(b) prescribes that DNSPs who fail to de-energise a customer's premises within the prescribed timeframes must pay charges for energy consumed at the premises after the timeframes expire.	Retailers are not required to provide compensation to their customers if a customer-initiated remote de-energisation is delayed and the customer receives usage charges as a result.
NERR 119(1)(a) prescribes that DNSPs may de-energise a customer's premises if the customer's retailer informs the distributor that it has a right to arrange for de-energisation under its contract.	The NERR are silent on when a metering provider can and cannot de-energise or re-energise a customer's premises.

Potential options to address this issue:

1. Align all existing obligations on DNSPs when they undertake manual re-energisation and de-energisation services whether done manually or remotely.
2. Create a new framework for metering providers to adhere to when carrying out remote services.

Issue 6 consultation questions

6a. Should the same obligations be applied to both manual and remote re-energisation and de-energisation services?

6b. Do you foresee any unintended consequences of aligning these obligations?

6c. Do you consider there to be any barriers that may prevent a customer being afforded the same protections if they have been remotely re-energised and/or de-energised?

Hot water embedded networks

Issue 7: Enhancing protections for hot water embedded network customers

What is a hot water embedded network?

In many apartment buildings across New South Wales, customers are supplied hot water through a common hot water system as opposed to an arrangement where each apartment has its own hot water heater.

This arrangement is referred to as a hot water embedded network when the common hot water system in the building is owned, maintained and metered by a third party (embedded network operator). This contrasts with a traditional common hot water system in which the hot water meters are owned and operated by the DNSP.

EWON has identified that more than 49,000 NSW residents live in apartments where their hot water is supplied by embedded network operators. This figure is expected to rise as new developments are set up.

How is hot water charged for in traditional common hot water systems?

Customers in traditional common hot water systems in New South Wales are generally charged for their hot water usage through their retail gas or electricity bill, based on the usage of the underlying energy source to heat the water. This is because distribution network-owned meters (including individual hot water meters) are required to be registered with AEMO and are subject to the provisions of AEMO's Retail Market Procedures (NSW and ACT). The market procedures are made under the National Gas Law and provide a formula for calculating the energy component of a hot water bill in relation to common hot water systems.

Customers in traditional common hot water systems, who are charged for hot water usage based on the energy used to heat the water, are able to access consumer protections contained within the National Energy Consumer Framework (NECF). The NECF regulates the sale and supply of electricity and gas to retail customers. Consumer protections available to electricity and gas customers through the NECF include:

- energy service standards and quality
- access to independent complaint and dispute resolution
- limitations on energy interruptions
- hardship provisions
- customers requiring life support equipment
- billing and metering requirements
- access to competition.

Why does the regulation of hot water need attention?

Embedded network hot water customers are not covered by the consumer protections provided within the NSW *Water Industry Competition Act 2006* (WICA) that specifically exempts entities selling heated water from its obligations. This exemption is provided on the basis of the WICA providing for the regulation of private companies constructing and/or providing water supply, not for water on-sellers such as embedded network operators. Requiring hot water embedded network operators to obtain a WICA licence could impose excessive burdens on hot water embedded network operators.

The NERL defines energy as 'electricity or gas or both' and does not apply to hot water. This means many hot water customers in embedded networks do not have access to consumer protections in national energy laws.

In addition, individual hot water meters owned and operated by third parties are not required to be registered with AEMO and are not subject to AEMO's market procedures. This lack of regulation leaves it open for hot water embedded network operators to choose how they bill customers for the supply of bulk hot water (either for the hot water in litres, or for the energy used to heat the hot water in megajoules or kilowatt hours).

Customers in a hot water embedded network arrangement can be charged for their hot water usage in litres rather than in units of gas or electricity. When this occurs, customers do not have access to any of the consumer protections afforded to customers in traditional common hot water systems.

Table 2 Comparison of traditional hot water systems and embedded network hot water systems

Traditional common hot water system	Hot water embedded network
Hot water meters owned and maintained by network provider	Hot water meters owned and maintained by a third party (embedded network provider)
Each hot water meter is registered with a meter identification number	Hot water meters are off-market and not registered
The customer is billed for the energy used to heat their hot water in megajoules (MJ) or kilowatt hours (kWh)	The customer is typically billed for the hot water in litres
The customer has access to retail competition	The customer does not have access to retail competition
The customer is covered by the consumer protections under the NECF	The customer does not have access to the consumer protections contained in the NECF (if billed in litres)
The customer has access to EWON dispute resolution	The customer may not have access to EWON dispute resolution

Implementation

For hot water embedded network customers to receive consumer protections comparable to customers in traditional common hot water system arrangements, hot water needs to be treated differently under NSW or national laws.

One option could be to require the sale of hot water to be billed in the underlying source of energy (in cents per megajoule or cents per kilowatt hour, depending on whether it was heated with gas or electricity) rather than as a hot water product (in cents per litre). This could be implemented in NSW laws.

Case study: Regulation of hot water in Victoria

The sale of common hot water in Victoria is regulated through the state's Energy Retail Code. The Energy Retail Code is developed by the Victorian Essential Services Commission, which exercises its responsibilities under the Victorian *Essential Services Commission Act 2001*.

The Energy Retail Code states that retailers must issue bills to customers 'for the charging of the energy used in the delivery of bulk hot water'. This means common hot water customers who are served by licensed retailers are considered energy customers and afforded the same protections that energy customers receive under the Energy Retail Code. Additionally, the Energy and Water Ombudsman Victoria notes that common hot water companies must hold a relevant energy licence, rather than a water licence, to sell common hot water.

The Energy Retail Code also outlines specific information that must be included in a customer's hot water bill that makes clear how the bill was calculated, including the water consumed and the gas or electricity conversion factors that have been used to calculate the final hot water usage charges.

Customers who are charged for hot water usage based on the energy used to heat the water, and are sold this energy by exempt entities (embedded network operators that are not authorised retailers), are able to access consumer protections provided under the AER's Retail Exemption Guidelines. These guidelines regulate the sale and supply of electricity and gas to customers of exempt entities (operators not required to obtain an energy retailer authorisation). Consumer protections available to customers of exempt entities are intended to reflect consumer protections afforded to retail customers under the NECF, as far as practicable, and include:

- access to independent complaint and dispute resolution
- limitations on energy interruptions
- hardship provisions
- customers requiring life support equipment
- billing and metering requirements.

Issue 7 consultation questions

7a. Is it appropriate to require the sale of hot water to be treated as the sale of energy, to allow hot water embedded network customers to be given similar consumer protections as those in traditional common hot water systems?

7b. Do you foresee any unintended consequences of requiring hot water embedded network operators to bill customers for hot water in the underlying energy source (in cents per megajoule or kilowatt hour), rather than as a separate 'hot water' product (in cents per litre)?

7c. Do you consider there to be any barriers that may prevent a hot water embedded network operator from billing customers in the underlying energy source?

7d. Do you consider the AEMO Retail Market Procedures (NSW and ACT) formula for the calculation of energy usage to be appropriate and reasonable for use within hot water embedded networks?

Part 2: The future of distributed energy resources

Distributed energy resources

Distributed energy resources (DER) refers to small to medium-scale technology assets located on the distribution network. These assets include behind the meter generation, storage and controllable load devices, as well as in front of the meter solutions such as solar farms and community batteries. This definition is not intended to limit DER owners and customers to households and small businesses, but to also include the wider commercial and industrial sector where the assets in question are of an appropriate scale.

The Clean Energy Regulator (CER) estimates that more than 700,000 small generation solar PV systems have been installed in New South Wales since 2001, and across the National Energy Market rooftop solar PV is the largest generator of electricity (ESB 2021). Two-way electricity flows are changing the electricity system demand profile and the grid operating envelope, pushing the upper and lower grid capacity limits at different periods. On the distribution network, this can result in grid congestion, shifts in voltage levels and a lack of sufficient load. This is challenging the ability of networks to transport electricity safely, securely and reliably. There are however considerable opportunities in DER with increasing innovations that can offer great value to households, market participants and the energy system as a whole. If the operation of DER and their interaction with the electricity system is controlled and coordinated, these small-scale assets and the flexibility they offer can significantly reduce the need for additional network infrastructure, cutting electricity bills as a consequence. They can also reduce the amount of grid-scale power generation and storage that is needed; further reducing costs for end-users.

This raises medium to long-term planning and investment opportunities for the electricity system. Modelling conducted for the ESB's Post 2025 Market Design work estimates the net benefits of DER and flexible demand to be around $6.3 billion over the 20-year modelling period. AEMO's Integrated System Plan (the Plan) also expects that DER are expected to double or even triple by 2040. All scenarios under the Plan expect to see residential, industrial and commercial customers continue to invest heavily in distributed PV, with increasing interest in battery storage and load management (AEMO 2020, p.41).

The growing digitalisation of the economy is providing increased opportunities to engage customers and tailor offerings to different customer needs. Despite all these trends, barriers continue to exist in the current market design that restrict the full value of DER and increased demand side participation being realised.

Issue 8: DER in New South Wales

A key role of the NSW Government in the energy sector transition is to provide a pathway to deploy existing and emerging technologies at scale over the coming decade, and to remove barriers for these technologies to enter the market, improving the speed and scale of take-up (NSW Government 2020). This includes addressing the major challenges and opportunities being faced by customers, such as:

- maximising the net benefits for all customers and shareholders
- the ageing distribution network infrastructure needing support with the multi-directional electricity flows, voltage, fluctuations in frequency and reactive power (AEMO & Energy Networks Australia 2019, p.12)
- the impacts of intermittent household solar generation needing to be absorbed reducing variable pricing and steep ramping requirements for existing assets
- the safe and efficient management of local electricity infrastructure through increasing visibility, transparency and control in the operation of the low-voltage network (AEMO 2019)

- equity considerations for households that have a one-way electricity flow facing increasing electricity bills for network upgrades to allow for multi-direction electricity flows (AEMC 2020a, p.10)
- the introduction of export limits or stricter network connection agreements reducing benefits for existing solar households and leading to less favourable market conditions for late adopters (AEMC 2020a, p.10).

As solar PV installations have grown, so has the industry, creating new jobs and supporting new innovative business models and technology developments. However, this growth has not been guided by quality or consideration of the effects on the network. For example, as solar PV provides such a large, variable and unscheduled generation profile, it is beginning to cause material disruptions to the local electricity market.

This issue is exacerbated by the fact that a significant portion of DER on the grid is not visible to AEMO or the DNSPs, resulting in greater control challenges and increased disturbances and power system fluctuations. Additionally, a lack of standardisation of DER installations creates further difficulties in predicting the response to network outages.

With this evolution of the electricity system comes opportunities to provide customers with greater choice and access to additional value streams such as innovative new market offers that value flexibility by incentivising demand side participation. Customer understanding, education and trust will be key to the successful implementation of these innovations. This includes ensuring transparency of information for participants, building a strong understanding of the services, accessibility and controllability levels, and providing sufficient protections such as customer override or opt-out capabilities.

As the NSW Government supports the state through the transition, it is also important that the most vulnerable are not left disadvantaged. The Finkel Review recognised that not all segments of the market would share in the benefits of new technologies (Commonwealth of Australia 2017, p.317). Low-income households, renters and people in high-density buildings do not have the same ability to invest in clean energy solutions to gain control of and reduce their energy usage. Specifically, the Review recommended that governments identify opportunities to accelerate the rollout of programs that improve access by low-income households to the benefits of DER (Commonwealth of Australia 2017, p.318).

Potential options to address this issue:

The evolution of the distribution energy system in New South Wales requires a clear direction and coordination. DER can be an integral part of a reliable, affordable and sustainable electricity system. Guiding principles for the coordinated integration of DER in New South Wales could include:

1. Ensure the impact on customers is a primary consideration in all decisions.
2. Support market mechanisms that enable the economically efficient optimisation of DER hosting capacity and flexibility on the NSW distribution network.
3. Seek to align state reforms to establish a national approach where possible.
4. Take a systems view approach on options and decisions to limit the costs to households, businesses and taxpayers.
5. Coordinate with other initiatives impacting the electricity sector, including the NSW Electricity Infrastructure Roadmap and Net Zero Plan initiatives.

Issue 8 consultation questions

8a. Are the suggested guiding principles appropriate and adequate to guide government strategy for enabling high levels of active DER in New South Wales?

8b. What practical measures should the government consider to support DER and the suggested guiding principles?

8c. How can the government support greater demand side participation and flexibility for customers and market participants?

8d. What material concerns and barriers will need to be mitigated to support DER?

8e. What could be done to ensure vulnerable, low-income and other 'locked out' households are not disadvantaged by the energy transition?

8f. What can the government do to improve equity of access to the benefits of clean energy solutions?

8g. How can the government help to unlock the full value of DER and load flexibility on the distribution network, and ensure asset owners are properly protected and compensated?

8h. What are the most promising clean energy solutions for delivering material private, network and market benefits?

Issue 9: Enabling flexibility and dynamic operating envelopes

An estimated 25% of NSW dwellings have solar systems installed. Currently, a principal benefit of rooftop solar comes from using as much of the electricity produced on site as possible (including storing for use later when the solar is no longer producing). However, with increased control and visibility, electricity exported from behind the meter could be a valuable source of supply, supporting the reliability and security of the network.

Innovative new technologies and service offerings that control and coordinate devices are enabling end-users to be more flexible in the way they use energy and interact with the grid. As a result, this increased flexibility can be aggregated to provide valuable services and enable load to better match local conditions on the network. This can enable households to actively participate in the energy market through automation and be financially rewarded. Increases in flexibility through demand side participation could also enable better management of the electricity system as a whole and less investment in network infrastructure being required, reducing energy costs for all users.

Most households choose to install rooftop solar PV to reduce their future energy costs.[1] According to the Australian Energy Council, the average installed rooftop solar system size was 8.06 kilowatts in 2019 (Australian Energy Council 2021, p.3). This average system size, along with data on the amount of electricity being exported to the grid from rooftop solar suggests that many households are installing solar PV systems that are significantly larger than their current consumption needs. The large amount of electricity being exported to the grid from these distributed rooftop solar systems is changing the dynamics of the NEM. Although home batteries could help households to capture the excess electricity their solar system is generating, to be used by the household later in the day, currently their relatively high cost and long returns on investment are restricting widespread adoption.

To manage this in the short term, DNSPs set solar export limits for customers' inverters and these limits may differ between DNSPs. Export limits can be inequitable as they are usually set on a first

[1] Community Insights Pulse Survey – Wave 2, Energy Module – household technology (2021).

come first served basis. They are also often conservative due to the lack of visibility of conditions and operating envelopes across networks. There is an opportunity across the medium and long term to increase the flexibility, controllability and visibility of DER assets on the distribution network.

One opportunity to manage this issue is to enable dynamic operating envelopes. Currently the operating envelopes for electricity customers to import and export electricity to the grid are fixed and the capacity of the network is static. Shifting these limits to be dynamic to vary imports and exports over time and location can allow for real-time adjustments to the hosting capacity of the local network. This can enable DER to have a greater ability to support the reliability and security of the electricity grid as well as provide localised electricity generation.

In the long term, additional strategies may be needed to complement this. The installed capacity of residential rooftop solar PV has steadily increased year-on-year in New South Wales, from roughly 150 megawatts in 2010 to around 900 megawatts in 2020. By 2036–37, AEMO has projected total installed capacity of rooftop PV in New South Wales will be 7.6 gigawatts. This would account for roughly 50% of the forecast maximum demand in 2036. While the overall electricity demand is also forecast to rise, this means that actual daytime grid demand will continue to fall as households generate increasingly more electricity than they use during daytime hours. This has resulted in the South Australian electricity network experiencing daytime minimum operational demand challenges and overgeneration issues.

In September 2020, the South Australian Government introduced a new technical standard requiring systems to be capable of remote disconnection and reconnection by authorised parties during electricity supply emergencies. Although New South Wales has not yet experienced the same level of lack of load, this could affect the state in the future. Some stakeholders have urged the government to consider regulating similar powers in New South Wales. The NSW Government has an opportunity to proactively implement measures now that would enable any future lack of load issues to be managed effectively or avoided.

Issue 9 consultation questions

9a. How can customers be encouraged to only install solar systems that suit their current consumption needs? What would be the most effective measure to achieve this aim?

9b. Will changing usage and system demand profiles likely disrupt grid security and reliability in New South Wales, and if so when and how?

9c. What can the NSW Government do to mitigate the potential problem of breaching lack of load thresholds?

9d. How can the NSW Government best enable dynamic operating envelopes?

9e. What issues or barriers, including around consumer protections, need to be considered if implementation of dynamic export limits is pursued?

9f. Are there NSW-specific customer, grid infrastructure and/or technological issues that should be considered in enabling dynamic operating envelopes?

Issue 10: Quality, standards and compliance

To enable customers to derive the maximum benefit from DER and to provide the most benefit to the distribution network, all installations should not only be controlled but also compliant with all relevant technical, safety and quality standards.

There is evidence from the CER's inspections (CER 2020) and NSW-based inspections, that a significant percentage of household solar and battery installations do not comply with the relevant

standards or requirements of connection agreements. In the case of lack of compliance to network standards, this affects the ability for these assets to respond correctly to disturbances on the low-voltage network. Similarly, if behind the meter assets are not correctly installed the safety, performance and reliability of those assets to respond as expected to network disturbances can be compromised.

For the effective transition to a two-sided market that allows participation of customer assets it is important for technologies installed to meet the required regulations and standards. Customers and aggregators are then able to maximise their return on investment from the DER with the best possible performance from the asset.

Currently a high percentage of rooftop solar PV inverters are not behaving in accordance with the volt/var and volt/watt settings of network operators and the standards. It is a requirement of installers to set inverters' voltage settings to the network connection agreements and the required inverter settings vary depending on location. When set correctly, an inverter will respond to changes in voltage, rather than shutting down when the voltage briefly reaches the upper limit and potentially causing cascading issues across the low-voltage network, affecting grid stability.

DNSPs do not have visibility of and cannot check whether inverters have been set correctly. This is because only the installer and the manufacturer have remote access to the inverter to check or change the settings. Work is being undertaken by AEMO to establish technical standards for the integration of DER. This includes a focus on establishing cyber security and communication standards (e.g. IEEE 2030.5 protocol). The application of these standards and ensuring compliance with them will support customers and aggregators to maximise investments in DER technologies.

By developing standards for secure and controllable DER, this can assist in driving further value for customers whilst also assisting in providing a reliable and secure distribution network. Ensuring that controllable DER is visible to the network is a key pathway for customers to receive better value and provide grid services. Controllability and visibility can also play an important role in identifying installed DER that are not compliant.

Issue 10 consultation questions

10a. How can solar installers and DNSPs ensure all inverters (new and legacy) are set correctly and have the correct capabilities activated?

10b. Is there value in DNSPs being able to remotely access or communicate with DER assets on their network to check and dynamically manage settings in accordance with changing conditions on the network?

10c. If an additional check of the inverter setting is required, who would be best placed to carry this out?

10d. Should New South Wales fast track mandating that all new DER installed must be active (i.e. visible and controllable)? What approaches should be considered to ensure these assets are active?

10e. What frameworks or measures should the government consider putting in place to ensure installed DER systems are compliant with the relevant technical and quality standards?

Issue 11: Improving the visibility of residential DER and data management

Electricity DNSPs in New South Wales require electrical installers to notify them following installation of certain DER. This information is provided by electrical installers to DNSPs through

the connection application process and through the provision of NSW Fair Trading's Certificate of Compliance for Electrical Work (CCEW).

In some cases, electrical installers working on the customer's behalf are not notifying the electricity DNSP following installation of private DER in their home, or not providing the correct information in the submitted CCEW. In other cases, there are discrepancies between the information provided in the CCEW and what was installed at the premises; however, the network has limited means of validating this information. This limited visibility of this type of infrastructure and the lack of real-time data showing the changing operating conditions across the network, makes it difficult for electricity DNSPs to manage the changing customer demands and operating conditions on the grid, impacting system security and reliability.

The information collected from electrical installers by electricity DNSPs is used in AEMO's DER register. The DER register stores information about DER devices installed at residential and business premises in the NEM. The register is intended to improve visibility to AEMO about DER devices so it can better manage the electricity grid.

Currently, the DER register includes data from grid connected devices, predominately solar. DNSPs require installers to input the relevant information into the register as part of the connection application process. Though the input of data into the DER register is the responsibility of the installer and this compliance can be checked by the network provider, improved processes and compliance with the input of information to the DER will provide greater visibility to networks and government in relation to the scale of DER deployed within New South Wales.

The DER register does not include in its scope behind the meter devices that do not require a connection agreement to install. These include EV charging infrastructure (that is not vehicle to grid), certain types of battery installations (e.g. a DC coupled battery retrofitted onto an existing solar system), and other controllable loads such as heating, ventilation and air conditioning (HVAC) systems and pool pumps. AEMO has recommended the location and sizing of assets such as EV charging infrastructure be a priority for inclusion in the DER register, followed by other types of DER. However, with the expansion of the DER register there will be a greater need to ensure compliance with reporting requirements and alignment with information provided to network providers by installers.

Issue 11 consultation questions

11a. Is the AEMO DER register the best way to improve the visibility of DER in New South Wales? What better approaches should be considered?

11b. What should the NSW Government do to help improve the visibility of changing operating conditions across the distribution network? Are behind the meter DER assets a viable and cost-effective solution?

11c. What would an ideal system, data collection and notification process look like to have the best oversight of these assets? Who should be responsible for this system?

11d. Should there be different notification requirements based on the size or capacity of the EV charging or other DER infrastructure not already captured by the DER register (i.e. 7 kilowatt or 50 kilowatt chargers)?

11e. How can installers of DER be supported to ensure robust reporting of DER data to networks and AEMO? How should compliance be enforced?

11f. What should the NSW Government consider in working with AEMO to expand the DER register to incorporate new controllable loads not already captured by the register?

Issue 12: Community batteries and emerging technologies

The DER sector is a rapidly evolving space with many new solutions and service offerings being developed and brought to market that could offer significant benefit to customers and the system as a whole. Community batteries have the potential to be more cost-effective than traditional network investments and beneficial for households who can rent a share of the storage, spreading the cost of the asset across a large number of participants. Community batteries can also unlock network investment and system services.

Community-scale batteries are generally located in front of the meter, are connected to the distribution network and have the capacity to store up to 5 megawatts of power (ARENA 2021). They can be used to support network operations by soaking up and smoothing solar exports to the grid and dispatching stored electricity later in the day during peak demand periods. Being on the low-voltage network close to the load allows DNSPs to use the asset to monitor and reduce grid congestion and can help avoid network augmentation costs to expand grid hosting capacity. Community-scale batteries can potentially play an integral role in New South Wales' transition to a decentralised grid.

Studies have been conducted to compare the financial viability of different models of community battery ownership (Shaw 2020). Findings suggest that third-party owned community batteries and DNSP owned for-profit batteries could deliver the greatest overall benefit. Some community battery ownership models can potentially generate revenue by participating in the wholesale electricity and frequency control and ancillary services markets. Third-party owned community battery models may also provide value to the widest range of customers, retailers, networks and battery owners, depending on how the benefits are distributed. However, an ability to unlock and disseminate the value they can provide to the local network needs to be established.

Community battery projects using different ownership models are being tested in New South Wales, such as Ausgrid's community battery trials in Beacon Hill and Bankstown, and The Beehive Project led by Enova Community Energy.

Community batteries would appear to offer a potential opportunity for solar households to get more for their investment, without bearing the full cost of installing a battery at their home. Along with solutions like solar gardens, they could also enable locked out households (e.g. renters, people in apartments, low-income, etc.) to access the benefits of clean energy solutions. However, market changes are required to enable the full value of these kinds of solutions to be unlocked.

Issue 12 consultation questions

12a. Are there any concerns about community batteries (or other similar DER innovations) from a system or customer perspective that should be considered as part of any future strategy or reform?

12b. What technical and regulatory changes that have not already been addressed, should be considered to enable the full value of community batteries and other DER solutions to be unlocked?

12c. Are there any technical requirements or standards that should be developed to support the safe and efficient rollout of these kinds of emerging solutions?

12d. Are community batteries an economically effective solution to managing the increasing amount of generation from rooftop solar PV on the distribution network? If not, what other solutions should be considered?

12e. What are the barriers for developing and implementing a community battery project, and then connecting and operating the battery?

12f. What other emerging solutions could enable locked out demographics to participate in the energy transition and benefit from clean energy solutions?

12g. Are there any other ways the NSW Government can support broader rollout of community batteries and other promising DER solutions that can enable locked out demographics to access the benefits of clean energy solutions?

Electric vehicle charging infrastructure

The global movement towards renewable energy sources has seen an increasing focus on electric vehicle (EV) and EV charging infrastructure from customers, businesses and governments. The uptake of EVs is expected to increase the average electricity usage in both housing and commercial buildings.

In New South Wales, EV charging infrastructure is concentrated in metropolitan areas and the availability of charging infrastructure could become a bottleneck to the uptake of EVs in the near future.

The NSW Government is supporting the development of EV charging infrastructure by co-funding a significant state-wide public charging network, providing coverage throughout dense metro areas and across regional highways and commuter carparks, and supporting uptake of EV charging infrastructure in strata buildings.

The NSW Government seeks stakeholder views to inform further strategies to support customer uptake of EVs by improving access to private and shared EV charging infrastructure in homes, townhouses and apartment buildings.

Issue 13: EV infrastructure in existing apartment buildings

EV charging infrastructure in apartment buildings can make EV ownership a more viable option for many apartment residents. In a survey of strata stakeholders in July 2020[2], only 1.3% of owners and 1.7% of Strata Committee members said they had experience of installing EV charging infrastructure in their apartment building or townhouse. This is despite major interest in the provision of EV charging infrastructure among those surveyed, with almost one-third of owners and

[2] Sustainability Infrastructure in NSW Apartments survey conducted by the Institute for Sustainable Futures at the University of Technology Sydney and Green Strata – July 2020 (prepared for the Department of Planning, Industry and Environment)

over one-third of Strata Committee members interested in the concept. Barriers to retrofitting existing buildings include issues around cost, awareness, approvals, technology options, wiring requirements, installations, operations, billing and advocacy.

The Department has also found that stakeholders have differing views on the efficiency and viability of various connection methods for EV charging infrastructure. This may be because there is limited experience in Australia of retrofitting EV charging infrastructure in existing apartment buildings to fully understand the benefits and limitations of each method. The three main methods for connecting EV charging infrastructure in apartment buildings are:

- Type 1 EV charger plugged into common property power point[3]
- Type 2 EV charger connected to common property electricity meter
- EV charger connected to an individual unit's electricity meter.

In addition, in apartment buildings that have EV charging infrastructure, many users are not accurately charged for their energy usage. This is because the number of EV owners is small and governance arrangements have not been established to monitor and charge customers for actual energy used from EV charging infrastructure. This also creates concerns about the equity for owners in a building paying for the large amounts of energy used by a small number of EV users. These energy costs can be hidden in strata levies and may not be easily identified.

Potential options to address this issue:

1. Develop EV charging infrastructure guidance material, an EV retrofit costing tool and model by-laws for owners' corporations and strata building managers.
2. Conduct technical feasibility studies for installing EV charging infrastructure in a range of apartment buildings to create case studies on the various options for installation.
3. Develop standards or technical requirements for connecting shared and private EV charging infrastructure in apartment buildings.
4. Consider regulatory changes to address equity issues in apartment buildings.

[3] Charging infrastructure organised by the owners' corporation are generally stand-alone Type 2 chargers. Type 1 chargers (mobile chargers used by plugging directly into a conventional power point) are more commonly used by individuals as a bespoke, short-term solution. These are generally not recommended in apartment complexes.

Issue 13 consultation questions

General

13a. How can the NSW Government support the residential deployment of electric vehicles and associated charging infrastructure?

EV charging infrastructure installation practices

13b. What are the roadblocks to the installation of EV charging infrastructure in apartment buildings?

13c. Of the three methods listed above, what is the preferred method for connecting EV charging infrastructure in apartment buildings?

13d. Do owners' corporations or strata managers have any concerns about residents contracting licensed electricians to install private charging infrastructure in their parking space and connecting it to their apartment's electricity meter?

13e. Should there be different connection requirements based on the size or capacity of the EV charging infrastructure (i.e. 7 kilowatt or 50 kilowatt chargers)?

EV charging infrastructure usage and billing practices

13f. Who would be best placed to own and operate EV charging infrastructure in apartment buildings?

13g. How should the costs of the EV charging infrastructure in the apartment building be accounted for?

13h. Do electricity retailers or any other entities offer any specialised plans or discounts to incentivise EV charging infrastructure in apartment buildings?

13i. Would it be fair to charge EV charging infrastructure users fees for installing, maintaining and operating the EV charging infrastructure in strata schemes (in addition to energy consumption charges)? Who should pay for these and why?

13j. Should energy consumption from EV charging infrastructure on common property be paid for by users or borne by the owners' corporation?

13k. Who should be responsible for managing and controlling the use of EV charging infrastructure on common property?

Distributor-led stand-alone power system regulatory framework

A stand-alone power system (SAPS) is an electricity supply arrangement that is not physically connected to the interconnected electricity grid. The AEMC's national framework for DNSP-led SAPS is designed to enable DNSPs to use alternative methods of electricity supply where it can be demonstrated that it is more economical to do so than deploying a traditional grid connection.

Under the national framework, customers who receive electricity through a DNSP-supplied SAPS would retain all their existing consumer protections, including access to retail competition, and existing reliability and safety standards.

These protections mean customers would not need to provide consent to be transitioned to a SAPS where a DNSP has determined that it would be more efficient to supply them on a stand-alone basis. Cost savings arising from the use of lower-cost stand-alone systems would benefit all users of the distribution network, through lower network prices.

In principle, the NSW Government supports the AEMC's national framework for DNSP-led SAPS and is developing the legislative and regulatory amendments necessary to enable adoption of the national framework for SAPS.

Nonetheless, a number of key stakeholders have expressed concerns regarding the AEMC's framework, and the NSW Government is looking to further understand these concerns and explore potential options to address them.

Issue 14: Service delivery model

The AEMC's national framework is based around an NEM 'consistency model' that primarily seeks to retain the customer's relationship with their existing retailer and retail contract. The AEMC has prioritised providing a seamless and consistent experience for customers that may be transitioned to a SAPS.

Some stakeholders have suggested that the DNSP-led SAPS service delivery model should provide customers with choice and flexibility regarding how their SAPS are delivered. . It has been suggested that the regulatory framework should not unduly restrict the ability of DNSPs to make efficient investments that improve supply to remote, edge-of-grid customers while also reducing costs for all customers that remain connected to the grid.

Case Study: PowerCo (New Zealand)

New Zealand's PowerCo's provides customers with an integrated SAPS energy service including generation, distribution and related services.

All of the upfront capital costs of the SAPS system are covered by PowerCo. Customers are sent invoices directly by PowerCo and are required to pay an ongoing maintenance fee, equivalent to a distribution network daily supply charge. The SAPS system provided a notification to customers when the diesel generator needed to be refilled. Customers were required to independently purchase and fill up their own diesel.

https://www.powerco.co.nz/get-connected/off-grid-solutions

Stakeholders consider that maintaining the role of a retailer, as proposed by the AEMC, has the potential to offer benefits for microgrids that can serve two or more customers (sometimes entire towns). In these instances, retailer participation can provide actual benefits such as separate billing and account services for individual microgrid customers based on their electricity consumption.

Conversely, for individual power systems supplying single customers in very remote areas, alternative delivery models may provide the most affordable and flexible service to customers. There are potential benefits in enabling these customers to choose how their SAPS is delivered.

Potential options to address this issue:

1. Permit DNSPs to directly contract with SAPS customers under limited circumstances with explicit informed consent.
2. Permit DNSPs to directly contract with SAPS customers where explicit informed consent is obtained, with regulatory oversight of end-user customer prices provided by the Independent Pricing and Regulatory Tribunal (IPART).

Issue 14 consultation questions

14a. What are stakeholder views on the AEMC's proposed service delivery model?

14b. Should DNSP-led SAPS customers always be required to contract with an energy retailer?

14c. Or is direct retail contracting with the relevant DNSP appropriate where the customer provides explicit informed consent? If so, under what circumstances?

14d. Should the same service delivery requirements be applied for both individual power systems (SAPS supplying single customers) and microgrids?

14e. Which service delivery model do stakeholders prefer?

14f. Are there other options the NSW Government should be considering?

Issue 15: Pricing

SAPS customers would incur distribution network charges imposed by their distribution network under the same network tariffs applicable to grid connected customers under the application of postage stamp pricing.

The AEMC's pricing framework proposes an AEMO administered settlement price mechanism in the absence of a wholesale market for SAPS energy supply. An administered settlement price may be simple for retailers to implement and may therefore encourage retailers to offer plans to DNSP-led SAPS customers and promote retail competition within the SAPS market.

The AEMC has noted that it would be difficult to provide cost reflective price signals through a SAPS settlement price (SSP) given the different underlying cost structures of different types of generating technologies, and that a time varying SSP may also reduce the simplicity of the overall approach.

Concerns raised by stakeholders

Link to wholesale electricity prices

The AEMC's proposed administered settlement price is linked to the wholesale price, which is a function of large-scale generation and demand from a variety of customers, including large industrial customers, businesses and residential customers, as well as other market factors. These external factors do not have an explicit link to the cost of electricity generation associated with SAPS as the energy would be generated and distributed using localised generation and distribution infrastructure located on the customer's property.

As such, the administered settlement price does not reflect the cost of supply of energy through a SAPS system, and may lead to confusion on the part of customers who do not understand why the price they are paying is tied to a market they no longer receive their energy supply from.

Efficient sizing and utilisation of assets

The AEMC's administered settlement price mechanism may result in the need for installation of oversized SAPS generation and storage systems to support the consumption profiles driven by non-cost reflective pricing. This may reduce the cost competitiveness of SAPS solutions compared to traditional network alternatives and inhibit delivery of more cost-efficient outcomes.

The AEMC's pricing model may also limit the extent to which price signals can be provided to the customer to optimise the use of the system as it is based on the wholesale cost of electricity. This could lead to inefficient utilisation of the system compared to one that was designed and built with a more cost/generation reflective pricing structure.

Potential options to address this issue:

1. Develop a NSW regulated price or price cap for DNSP-led SAPS end-user prices, that reflects the underlying costs of SAPS. There is potential to explore a time-varying element that could provide price signals for SAPS customers.
2. New South Wales to advocate for a nationally consistent time-varying administered settlement price that more accurately reflects the cost and availability of generation at a particular time.

Issue 15 consultation questions

15a. What are stakeholder views on the AEMC's proposed pricing model?

15b. To what extent is non-cost reflective pricing a barrier to the roll-out of SAPS systems?

15c. Given the limited number of expected SAPS customers in New South Wales, would it be more practical to maintain NEM consistent pricing?

15d. To what extent is the pricing model likely to affect the efficient sizing of the SAPS system and the customer's experience?

Issue 16: Service classification

Under the AEMC's national framework, DNSPs are prohibited from providing generation services directly to a SAPS customer without a ring-fencing waiver or exemption provided by the AER, and would need to procure the supply of SAPS generation services from a third party through a competitive market process.

Concerns raised by stakeholders

Market for the provision of generation services

The national framework relies on the assumption that there is an adequate market for the provision of generation services across the state with the capacity to provide services in remote areas, and that is equipped to respond quickly to natural disasters or fault and maintenance requests in remote locations, all at a lower cost than a DNSP-provided generation service.

Stakeholders have noted that at present, the market for third-party provision of SAPS generation services is still in its early stages and has not yet been rigorously tested in an emergency. Nor is it evident yet that the third-party generation market can provide a generation service at materially lower cost than a DNSP in remote areas.

Inclusion in the regulated asset base

Under the national framework, DNSPs will not be permitted to include generation infrastructure in their regulated asset base (RAB). This may affect the DNSPs in making technology neutral network investment decisions as DNSPs may effectively be disincentivised to deploy SAPS over traditional network infrastructure since they would not be able to earn a regulated return from SAPS assets.

Where a DNSP does obtain a ring-fencing waiver or waiver from the AER, the DNSP would be able to include the generation infrastructure in their RAB; however, the existing waiver process has been identified as being administratively burdensome and adds investment uncertainty.

AER Electricity Ring-fencing Review

On 16 August 2019, the AER commenced a review of the current electricity distribution ring-fencing guideline. The objectives of this review were to update the ring-fencing guideline, and explore further issues associated with its application within SAPS.

The AER released their final guideline in November 2021. This guideline provides an exemption to allow distribution businesses to own and operate generation services for distributor-led SAPS up to a cap. The AER final guideline permits DNSPs to receive generation revenue up to a cap that is a percentage of the total annual revenue requirement for a regulatory year. Based on the AER's estimates, the final guideline caps for NSW DNSPs equates to between approximately 110 and 1050 individual SAPS sites depending on distribution region.

Potential options to address this issue:

1. NSW to work with the AER to reclassify SAPS generation services through the Framework and Approach process. This process could potentially be used to classify specific SAPS services (e.g. fault repair and maintenance to generation assets) as part of a distribution service.
2. NSW to permit DNSPs to include SAPS generation assets in their RAB above the AER generation cap. This would require New South Wales to derogate from the national framework to allow DNSPs to own and operate SAPS generation assets and include these assets in their RAB.

Issue 16 consultation questions

16a. Do stakeholders feel the AEMC's proposed service classification arrangements are suitable?

16b. Do stakeholders feel the AER's final ring-fencing guidelines adequately support DNSPs to provide generation services in the absence of a market for third party provision of SAPS generation services?

16c. Should consideration be given to an increased exemption cap above that provided by the AER's national exemption cap?

16d. Are stakeholders of the view that some form of change is needed to enable network ownership of SAPS generation assets?

16e. Which service classification option do stakeholders prefer?

16f. Are there other options the NSW Government should be considering?

Part 3: Energy customers' digital journey

Digitalisation of the energy market

The NSW Government is eager to understand ways it can lead innovation and digitalisation in the energy market. In line with its customer-centric focus to deliver an affordable, reliable and sustainable energy future, the NSW Government is prioritising creating user-centred digital tools and services. This section of the consultation paper seeks stakeholder views on energy customers' access to information and their interaction with government.

The NSW Government invites stakeholder views on existing barriers and enablers in the energy customer's digital journey, including views on existing government initiatives and new areas the NSW Government could explore.

Issue 17: Access to information

Information about energy technologies, installation and approvals processes, as well as government programs and rebates, are currently hosted on various government, industry and customer websites. This can be both confusing and time-consuming for customers to navigate. There is also an information gap for renters, as well as residents of strata-managed buildings and residents with embedded energy networks.

In a survey of more than 2600 respondents about installing sustainability infrastructure in NSW apartment buildings, both individual unit owners and owners' corporations reported being overwhelmed during the 'consideration and research' phase (McGee et al. 2020, p.33).

The internet, personal networks and product providers are the most commonly consulted sources of information; however, customers are wary of vested interests and poor recommendations, and recognise state governments as trusted sources of information (McGee et al. 2020, p.33).

The NSW Government is considering developing a 'one-stop-shop' for customers to access information about smart meters and DER upgrades.

Potential options to address this issue:

1. Establish a sustainable homes Information Hub to help renters, owners and owners' corporations navigate the journey to installing sustainability infrastructure in houses, townhouses and apartment buildings.
2. Establish a sustainable homes Concierge Service to help residents with more complex and unique matters that require human support. The Concierge Service would act as a customer service office, where residents can call to get more information on their unique situation, have questions answered and learn more about sustainability initiatives.

Issue 17 consultation questions

17a. What kind of information, or which topics, do customers find most challenging or confusing to find information about in relation to smart meters, DER and/or other energy technologies?

17b. Are customers likely to access the information on a website using a desktop browser or a mobile device?

17c. Would customers prefer to focus their research journey by learning about the various technologies available to them, or by learning about their specific dwelling type?

Issue 18: Electricity retailers' emissions performance

In 2020, the NSW Government made a commitment under the NSW Net Zero Plan to enable customers to compare the emissions performance of energy retailers more easily (NSW Government 2020). The aim is to improve transparency in the electricity retail market and empower customers who wish to consider environmental factors when selecting an energy provider or plan. This work program is initially considering electricity retailers but may expand to include gas providers in the future.

There are a range of options under consideration to implement this commitment, including providing emissions information on the Australian Government Energy Made Easy bill comparison website. The NSW Government is undertaking customer research to better understand customer needs and desires in relation to electricity retailers' emissions performance. For example, a recent customer research survey shows 35% of respondents strongly agree or agree that they are willing to pay more for electricity if the retailer uses more renewable sources of electricity.[4]

The government's intention is to present retailers' emissions profiles, and the calculations behind the profiles, in a simple, easy to understand format.

Criteria to calculate retailer emissions performance

To deliver this commitment, the government is exploring a range of methodologies to calculate electricity retailers' emissions performance. The approach will be guided by the following principles:

- **ease** of obtaining the required data and information from retailers
- **accuracy** of the criteria in forming electricity retailers' emissions profiles, and
- **usefulness** and desire for the information by customers.

The Department held targeted consultations with industry and customer stakeholders in late 2020 to develop an initial draft of potential approaches to calculate electricity retailers' emissions performance. This includes understanding from electricity retailers what information and data they currently capture and report for internal or other purposes.

Some of this information can be complex to obtain and the government is interested in leveraging existing reporting mechanisms and publicly available information to minimise the regulatory burden of this commitment.

The methodological approaches are categorised into two high-level areas: generation source and other initiatives (including offsets) as per Table 3.

Table 3 Possible options to calculate the emissions performance of retailers

No.	Data source	Description	Components
1	Type of generation purchased by electricity retailer outside of the spot market	Assessment of actual electricity purchased by retailers outside of the spot market	May be broken down into either: a. the generation fuel type of these purchases, or b. the associated generation asset.
2	Renewable Energy Target compliance (RET)	Assessment of the extent to which electricity retailers have complied with the RET	For example, reviewing whether (and if so, by how much) the electricity retailer incurred a shortfall of more than 10% in its large-scale generation certificate (LGC) and/or small-scale technology certificate (STC) obligations.

[4] Community Insights Pulse Survey – Wave 2, Energy Module – perception of general energy issues (2021).

No.	Data source	Description	Components
3	GreenPower	Review of the electricity retailer's GreenPower offerings	May include sub-criteria such as: a. whether the electricity retailer's price for GreenPower is higher/lower than the market average, or b. total amount of GreenPower per electricity retailer as a percentage of the retailer's total residential electricity sales, or c. whether the electricity retailer actively promotes GreenPower.
4	Offsets (excluding GreenPower)	Review of the electricity retailer's other carbon offset offerings (excluding GreenPower)	May include sub-criteria such as: a. whether the electricity retailer's price for offset offerings is higher/lower than the market average, or b. total amount of offsets per electricity retailer as a percentage of the retailer's total residential electricity sales, or c. type and location of offsets, or d. whether the electricity retailer avoided emissions, for example by preferencing renewable generation sources, or e. evidence that the electricity retailer voluntarily submitted LGCs.
5	Various	Assessment of other emissions-related or broader environmental initiatives	May include aspects such as electricity retailer operational scope 1 decarbonisation; policy positions, commitments or investment towards emissions reductions; or support for energy efficiency, demand response and/or other initiatives and programs.

Issue 18 consultation questions

Customer preferences

18a. Would customers prefer to review emissions performance based on the electricity retailer (i.e. the business) or based on the electricity plans offered?

18b. Where would customers prefer to see information about retailer emissions (e.g. on a bill, on the retailer website, on a retail plan comparison site, or a combination)?

Electricity retailer practices

18c. Are there existing frameworks that electricity retailers use, or can use, to report on emissions and/or offsets? If so, how can these frameworks incentivise renewable energy generation over carbon offsets to ensure avoided emissions are rated highly?

18d. What information to retailers already collect about the generation sources when purchasing electricity; for example, to meet internal targets or the RET? (Responses flagged as commercially sensitive will not be shared.)

18e. What offset programs do electricity retailers currently participate in? Are the programs in Australia or international?

18f. What actions, if any, do electricity retailers take to promote GreenPower? Do electricity retailers offer GreenPower at a competitive market rate, or absorb any of the costs? How many of your customers opt-in to GreenPower?

18g. Do retailers foresee any complexities or challenges reporting on the draft criteria?

18h. How often should the information about retailers' emissions performance be reported: monthly, quarterly, annually (by calendar year or financial year)?

Issue 19: Definition of life support equipment for energy rebates

Approximately 40,000 customers receive the NSW Life Support Rebate (LSR) annually. The LSR helps NSW customers who use approved energy-intensive life support machines at home to cover the costs of their household energy bills.

Eligibility for the LSR is based on the NSW Government's list of approved life support equipment. Life support equipment is defined in the NERR by the AER (AER 2019, p.5). This definition is used to determine retailer and distributor obligations around disconnection of electricity services for registered customers, and allows for 'any other equipment that a registered medical practitioner certifies is required for a person residing at the customer's premises for life support'.

The NSW list of approved life support equipment focuses on specific eligible equipment based on advice from NSW Health. This list was last reviewed in 2014 and there is an opportunity to update the list to include new, energy efficient or emerging life support equipment.

Additionally, the Department is considering a broader review of the LSR and Medical Energy Rebate to ensure they remain fit for purpose. This could include assessing the value of rebates, removing duplication with similar NSW and Commonwealth government rebates, and developing options for investing in emerging technologies that can maintain reliable electricity supply for customers with life support equipment. The Department will undertake separate consultation on this review at a later date.

Potential options to address this issue:

1. Review the NSW list of approved life support equipment and update it with new or emerging life support equipment available in the market.
2. If required, work with the AER to update the definition of 'life support equipment' in the NERR in order to align with any updates to the NSW list.
3. Mandate regular reviews of the approved lists of life support equipment based on assessment of new equipment available in the market.

Issue 19 consultation questions

19a. Are customers and energy retailers aware of new, energy efficient or emerging life support equipment that are not eligible for the NSW LSR?

19b. How often do energy retailers reject an application for the NSW LSR based on equipment type (if this data is available)?

19c. Can electricity retailers advise how many of their customers have notified it of life support equipment requirements but do not receive the LSR in New South Wales?

19d. How often should the NSW Government review its list of approved life support equipment?

19e. How can medical declarations that support a customer's need for life support equipment be automated to reduce the burden on impacted customers?

Issue 20: Digitalising engagement with DNSPs

The NSW Government is seeking to support greater digitalisation of energy businesses' engagement with customers. Electricity DNSPs do not typically have access to phone or email contact details of their customers and typically communicate with them via mail and written notices. In some cases, this can slow down and add costs to DNSP engagement with customers.

Customers in many instances receive, or can elect to receive, communications and notices from electricity retailers electronically. The NSW Government is seeking stakeholder views on how electricity DNSPs can be supported to engage with customers electronically where this is their preference.

Issue 20 consultation questions

20a. Would customers and DNSPs benefit from greater digitalisation of communication between them?

20b. Are there current barriers to DNSPs communicating to customers electronically?

20c. Would the development of systems that support customers opting-in to receive electronic communications and notices from their DNSP be of value?

Issue 21: Improving access to data on customers of embedded networks

There are currently gaps in data on the number of embedded network operators and their customers in New South Wales and across Australia. This gap arises as 'deemed exempt' embedded networks (typically those with fewer than 10 customers per site) are not required to register with the AER, while registered exempt sellers are not required to report the number of customers or child connection points in their network.

Increasing visibility of embedded network operators would assist with ensuring that relevant embedded network operators become members of the EWON as well as their other obligations under the AER's exempt selling guidelines. It would also assist with NSW policy analysis on consumer protections for embedded network customers. The NSW IPART recommended further work on these matters in its most recent electricity market monitoring report for 2019–20 (IPART 2020).

The NSW Government understands that distribution networks also have an interest in determining the number and size of embedded networks in their customer base. Such data could inform modelling of expected new customer connections and types. The NSW Government is seeking stakeholder views on ways to improve data on the number of embedded network operators and their customers.

One option could be to introduce a regulatory requirement for distribution networks to request information from their customers about whether they are embedded network operators and report this to government.

Issue 21 consultation questions

21a. If embedded network operators were required to report on their 'child' connection points, should this reporting be done to the AER or their local electricity distribution network?

21b. Other than status as an embedded network, and the number of 'child' connection points, what other data reporting requirements would be of value?

Issue 22: Other improvements

The NSW Government invites stakeholder views on other barriers customers encounter on their energy journey and interactions with government, including options to address them.

Issue 22 consultation questions

22a. Is there any other NSW energy related information that could be made more digital friendly?

22b. Are there any other NSW Government energy related processes that could be digitalised or streamlined, including for industry?

22c. Are there any new or emerging customer needs in the energy space that government should explore?

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