Miami SHS 150kW Australia installed by Sydney Solar Works

UNTAPPED POTENTIAL OF COMMERCIAL & INDUSTRIAL ENERGY RESOURCES IN THE NEM

September 2025

nexa ADVISORY

About Nexa Advisory

Nexa is an advisory firm with an unwavering focus on accelerating the clean energy transition, in a way that provides secure, reliable, and affordable power for consumers of all types.

Nexa Advisory is a team of experienced specialists in the energy market, policy and regulation design, stakeholder engagement, and advocacy. We work with public and private clients including renewable energy developers, investors and climate impact philanthropists to help them get Australia's clean energy transition done.

Nexa Advisory stands at the nexus of the energy sector's complex web of stakeholders. We support and direct their dialogue so as to remove the roadblocks to the transition.

We have a track record in policy creation, advocacy, political risk assessment, and project delivery. We are holistic in our approach and deliver solutions with people in mind, and commercial intent.

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We would like to acknowledge SolarEdge for the case study and some of the images included in this report. SolarEdge Technologies is a global frontrunner in smart energy solutions, particularly renowned for revolutionising how solar power is harvested and managed with its direct current (DC)-optimised inverter systems.

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Executive Summary

Australia's Commercial and Industrial (C&I) Consumer Energy Resources (CER) - including rooftop solar, batteries and controllable loads - represent a vast, untapped opportunity to reduce energy costs, enhance grid reliability and accelerate the clean energy transition.

C&I CER is a win-win for businesses, governments and consumers. Yet, current renewable energy schemes exclude mid-scale C&I projects - too big for small-scale rebates, too small for large-scale incentives - leaving vast potential untapped.

Despite more than 28 GW of rooftop solar potential, only 5 GW is installed today, with a forecast 15.4 GW by 2035. This slow uptake is primarily due to policy gaps, outdated tariff structures and complex grid connection processes. However, if Australia delivers on the potential capacity, it will cut the need for major transmission upgrades and unlock a faster transition.

In this report, Nexa Advisory comprehensively addresses the critical issues required to achieve the full value of C&I CER and ensure a level playing field for all market participants. This includes:

- tariff reform that rewards flexibility and controllable load;
- transparency from Distribution Network Service Provider (DNSP) to simplify and de-risk grid connections; and
- strict enforcement of ring-fencing arrangements to uphold competition in the delivery of CER.

By closing regulatory gaps, modernising tariffs for business customers and enabling genuine demand flexibility, Australia can unlock billions in system savings, accelerate renewable integration and support industrial competitiveness. Crucially, it would also unlock significant private investment and innovation[1], reducing reliance on taxpayer subsidies.

The Opportunity

The economic and system-wide benefits of scaling C&I CER are compelling. Businesses consume more energy than residential users but have enormous potential to supply renewable energy at a very low cost to other system users.

Rooftop solar offers businesses massive savings by delivering power at around $1.30 per watt and batteries cutting annual power bills by up to $92,000 for large facilities such as warehouses.

For the broader system, C&I CER means the nation could avoid $11 billion in network costs by 2040, while adding dispatchable demand-side resources that help stabilise the grid. Unlike large-scale transmission or generation projects, C&I CER can be deployed quickly - often within weeks - avoiding land-use conflicts and accelerating the energy transition.

1 Such as the $1 billion C&I CER plans of CEP.Energy

Barriers

Despite these clear benefits, C&I CER uptake remains weak because mid-scale projects fall into a policy 'missing middle too large for Small-scale Renewable Energy Scheme (SRES) rebates and too small for Large-scale Renewable Energy Target (LRET) or Capacity Investment Scheme (CIS) support.

On top of this, outdated tariffs punish flexibility and exports, while DNSPs impose complex, costly and opaque grid connection processes. Demand-side participation (DSP) schemes such as the Wholesale Demand Response Mechanism (WDRM), remain underutilised due to restrictive eligibility criteria, complex baselines, and low visibility in the market.

Examples of untapped potential are:

- **Data centres:** With demand projected to rise from 3.9 TWh in 2025 to 34.5 TWh by 2050, data centres are both a major challenge and a prime opportunity to integrate C&I CER as a default requirement for new connections.
- **Caribbean Business Park (Melbourne):** The potential for 50 MW of rooftop solar plus batteries demonstrates the scale of untapped resources. Yet, policy gaps and DNSP connection hurdles risk the project downsizing, despite its potential to avoid costly network upgrades in a constrained AusNet distribution zone and deliver local resilience.

Summary of Recommendations

Nexa Advisory calls for urgent action by federal and state energy ministers, to unlock the untapped opportunities for C&I CER. As a priority, governments should:

1. **Establish a C&I dedicated tender** within the Capacity Investment Scheme – to underwrite flexible demand and aggregated CER, with lower entry thresholds (e.g. 1 MW).
2. **Expand Clean Energy Finance Corporation (CEFC) and Australian Renewable Energy Agency (ARENA) support** – concessional finance and grants targeted at mid-scale C&I installations, including storage and electric fleet charging.
3. **Accelerate reforms to value energy services and contract markets** – including tariff reforms that reward flexibility, exports and CER integration for C&I consumers, aligned with the recent National Electricity Market Review.
4. **Strengthen DSP mechanisms** – expand Wholesale Demand Response Mechanism (WDRM) eligibility and enable multi-site participation
5. **Ensure competitive neutrality** – prevent DNSPs from competing in C&I CER delivery while mandating stronger transparency and data-sharing obligations. This must include streamlined grid connection processes, standardised requirements, penalties for delays and flexible connection options.

Introduction

Commercial and Industrial (C&I) Consumer Energy Resources (CER) remain an untapped opportunity. The C&I segment comprises businesses and organisations - including manufacturing facilities, warehouses, offices and retail outlets – which consume significantly more energy than residential and small business users. This segment has the potential to make a significant contribution to the energy system, at a very low cost to other system users.

Recently analysis has suggested that the current capacity of C&I solar is only 5 GW, but that it could grow to 15.4GW by 2035[2]. Notably, there is an estimated potential of over 28 GW of C&I rooftop solar PV[3].
We estimate that this comprises of:

- 8.1 GW in New South Wales;
- 6.3 GW in Queensland;
- 6.1 GW in Victoria;
- 3.7 GW in South Australia;
- 2.8 GW in Western Australia;
- 600 MW in Northern Territory; and
- 300 MW in Tasmania.

Shown in Figure 1, AEMO projects strong growth in business rooftop PV (systems under 100 kW) alongside continued expansion in PV non-scheduled generation (PVNSG) (systems between 100 kW and 30 MW). Business rooftop PV generation is expected to more than triple over by 2055, while PVNSG grows more than eight-fold, reflecting accelerating uptake of mid-scale systems across commercial and industrial facilities. Together, these trends highlight the significant role that C&I rooftop solar installations will play in decarbonising the electricity system and reducing reliance on grid-supplied energy.

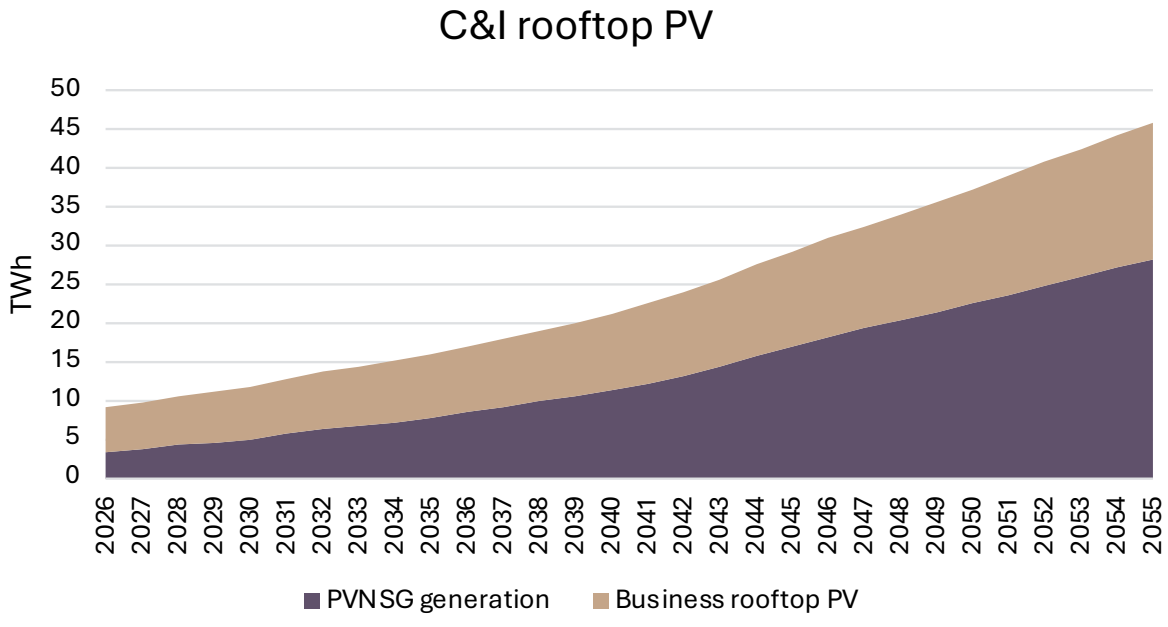


Figure 1 – C&I Generation[4]

2 BloombergNEF, Australia Market Outlook 2H 2025: Volatility and Delays, August 2025

3 Roberts, M. et al., How much Rooftop Solar can be Installed in Australia? Report for the Clean Energy Finance Corporation and the Property Council of Australia. Sydney, June 2019

4 AEMO, 2025 ESOO

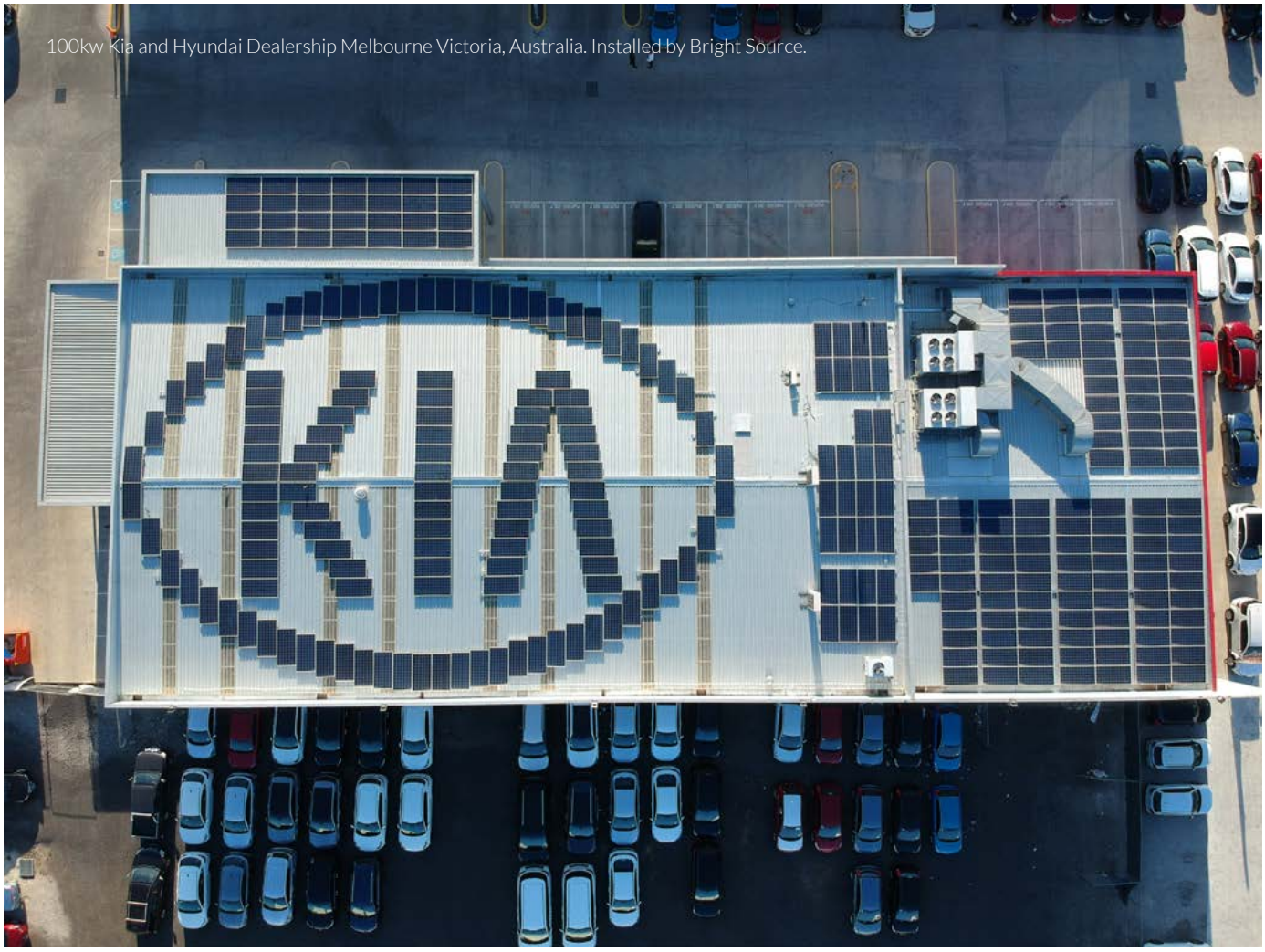
Case study: Early examples of C&I projects highlight untapped potential

Across the NEM, competitive providers have already delivered successful C&I CER -rooftop PV, batteries and microgrids - showing what's possible when the settings are right.

SolarEdge alone monitors 7,373 C&I systems nationwide totalling 2.31 GW - though most are under 100 kW because current incentives favour smaller installs[5].

At the industrial end, AGL's Cadell Orchards microgrid pairs 4.9 MW of solar with a 5.4 MWh battery, illustrating what larger sites can deliver when supported[6].

Despite policy gaps and connection hurdles, these deployments foreshadow the scale of C&I CER that AEMO projects.



100kw Kia and Hyundai Dealership Melbourne Victoria, Australia. Installed by Bright Source.

5 Source: SolarEdge

6 AGL, Cadell Orchards Microgrid and Solar Farm Installation

In today's challenging cost of living environment, electricity affordability is of paramount importance for these C&I users. Recent national and state surveys show the energy cost burden worsening for businesses: 78 per cent of small to medium enterprises (SMEs) have reported higher energy bills over the past two years and 85 per cent say they would struggle to absorb further rises[7], while a separate New South Wales survey finds 87 per cent of firms are worried about input-cost pressures led by utilities[8].

Although only one of the costs of doing business, increasing energy costs impact the management and operation of businesses. Higher energy bills are either absorbed by businesses or are passed on to consumers, potentially impacting business competitiveness – ultimately impacting their bottom-line.

Yet, despite the financial benefits for businesses directly, this segment has seen much lower CER growth relative to residential installations. This is due to several barriers preventing businesses from realising the potential of distributed consumer energy solutions.

Even though their consumption profiles (i.e. time of day) may better match the generation of solar PV than households, there are clear roadblocks to uptake for businesses.

Additionally, there is currently a lack of incentives and mechanisms to drive meaningful uptake of CER by C&I consumers. To date, there have been no measures targeting this segment. Meanwhile, households and small businesses have been supported by:

- the recently commenced $2.3 billion Cheaper Home Batteries scheme; and
- the $1.8 billion Energy Bill Relief Fund.

This lack of policy focus is more than just an equity issue – more effectively unlocking the potential for C&I CER would unleash significant untapped resource for the clean energy transition, helping to provide affordable, reliable electricity while mitigating the need for distribution network augmentation. There are significant benefits of the uptake of C&I CER to these consumer segments and more broadly to the energy system that results in lower energy bills for all consumers.

Benefit Area	For Businesses	For the Grid & All Consumers
Lower energy costs	Lower bills due to time-of-use (TOU) tariffs and reduced demand charges; e.g., a 200kWh battery installation can result in $92,000 in annual savings for a 20,000 sqm warehouse	Reduced peak load and wholesale demand
Flexibility	Batteries and smart loads smooth demand profile	Dispatchable CER supports grid operations
Network cost deferral	Immediate relief for hosting capacity constraints	An estimated $11 billion avoided network spend by 2040
Deployment speed	Installed in weeks, minimal land use	Rapid addition of capacity, supporting reliability and resilience
Capex efficiency	$1.30/W on rooftop PV	Competitive cost with no new transmission build-out

Table 1 – summary of benefits of C&I CER

Critically, these solutions can be delivered faster than large-scale projects – and do not depend on the delivery of major transmission projects which continue to be delayed[9].

If we unlock the untapped opportunity of C&I CER – it's a win-win for power bills while providing 'insurance' for maintaining affordable and reliable electricity for consumers and the system.Nexa Advisory has previously discussed the barriers and opportunities for this segment – with a particular focus on New South Wales[10]. This report aims to update our previous analysis and broaden the scope to the rest of the NEM.

7 Council of Small Business Organisations Australia, COSBOA ENERGY BILL SHOCK: Future Proofing Small Business

8 NSW Small Business Commissioner, Small Business Survey

9 Renew Economy, Key transmission link delayed by two years in new blow to wind and solar projects, 1 July 2025

10 Nexa Advisory, Accelerating C&I rooftop solar and batteries is a 'win win' Discussion Paper, February 2024

The untapped potential of C&I CER

Australia is a world leader in the uptake of rooftop PV – particularly across New South Wales, Queensland and Victoria (Figure 2). Additionally, rooftop solar contributed 12.1 per cent of generation across the National Electricity Market (NEM) in 2024[11] and comprised a third of total renewable energy supply.

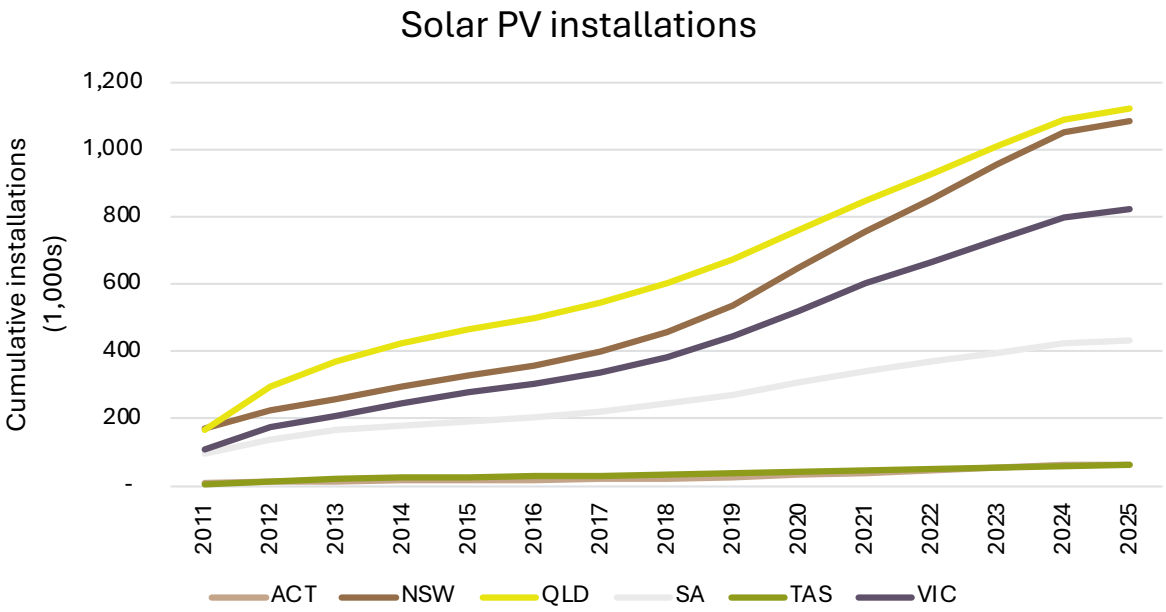


Figure 2 – Small-scale solar PV installations[12]

We are now also seeing consistent growth in behind-the-meter battery energy storage systems (BESS), with small-scale residential and business now surpassing 4.3 GWh of installed capacity[13]. The Federal Government's Cheaper Home Batteries Program has bolstered the uptake of home and small business batteries, with 19,592 installations in the first month of the program[14] – compared to 72,500 installations across the whole of 2024[15].

This is a significant achievement, given state-based schemes, with the exception of those in South Australia, have been limited in program size and financial support to date.

However, the lack of focus and supporting schemes for C&I consumers has led to a lag. Support for C&I batteries has been piecemeal across state and federal governments – and there is a clear need for targeted support to unlock these resources at the size and scale needed for this type of installation.

For example, the Federal Government's Capacity Investment Scheme (CIS) was designed for grid-scale assets of at least 30 MW, and explicitly excluded virtual power plants, demand-response or other aggregated behind-the-meter resources when it commenced. However, the Federal Government has recently considered whether to incorporate aggregated resources – such as virtual power plants (VPPs) – into this scheme, although has proposed that the 30 MW threshold still applies[16].

11 OpenElectricity

12 Adapted from Clean Energy Regulator small-scale postcode data

13 Nexa Advisory analysis of SunWiz data

14 Clean Energy Regulator, Strong solar battery uptake in first month, August 2025

15 Sunwiz

16 Australian Government, Department of Climate Change, Energy, the Environment and Water, Aggregated Resources in the Capacity Investment Scheme Consultation, July 2025

C&I CER have also missed out on benefits from other schemes, such as the Renewable Energy Target, which includes the SRES and LRET. The SRES – which provides Small-scale Technology Certificates (STC) to eligible installations – is aimed at small-scale residential and small business installations under 100 kW and can be provided as an upfront rebate. Any installation above this threshold is treated as 'large-scale' and must navigate the more complex LRET process to earn LGCs. This carries additional administrative burden and requires managing or organising offtake of the LGCs. Additionally, the LRET rewards accredited renewable energy generation, this scheme does not award LGCs to batteries. As a result, C&I-scale installations fall into a clear policy gap; they are too small for the CIS and too large for STCs.

This has resulted in limited uptake of rooftop PV for businesses (Figure 3) which is reflected in much lower PV generation (as a share of total consumption) for businesses, compared with households - whose solar generation is expected to exceed their total demand by 2041. This means that while the household sector will, on average, be net exporters of electricity throughout the year, the business sector is not expected to generate more than 14 per cent of their demand by 2054. This is a consistent trend across states.

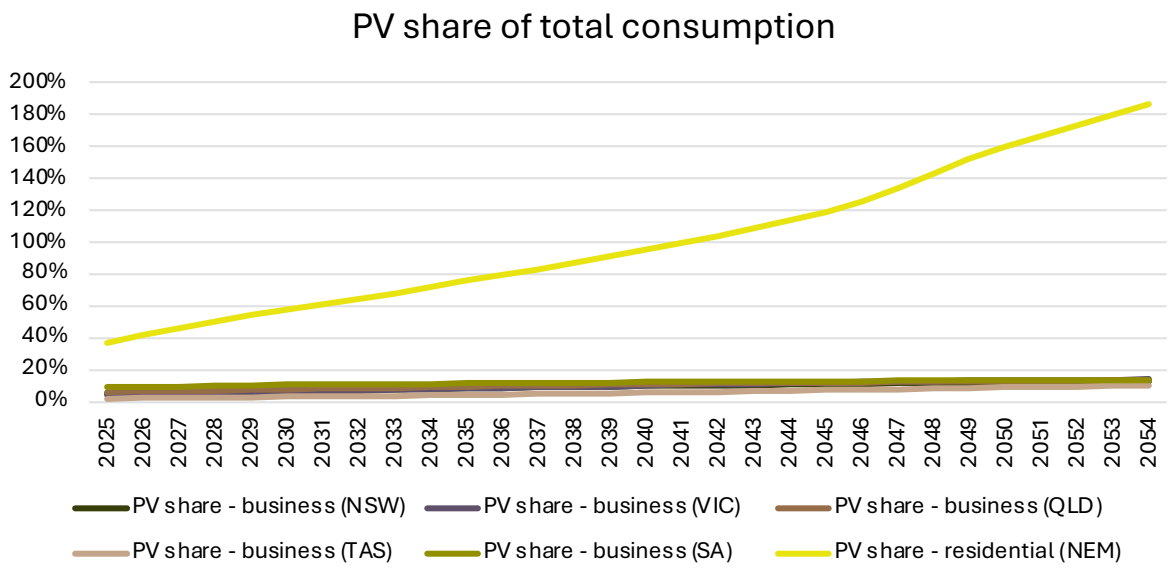


Figure 3 – PV share of total consumption[17]

17 Adapted from 2024 ISP

The nascent C&I battery market will play a role in enabling CER uptake

Batteries turn passive solar rooftop PV into a dispatchable, high-value energy asset. For C&I sites, they unlock additional bill savings, resilience and system benefits that cannot be captured with PV alone. Australia's C&I battery market is still at early stages, with less than 700 MWh installed by 2024 (Figure 4) but momentum is building as costs fall, and real-world business cases emerge.

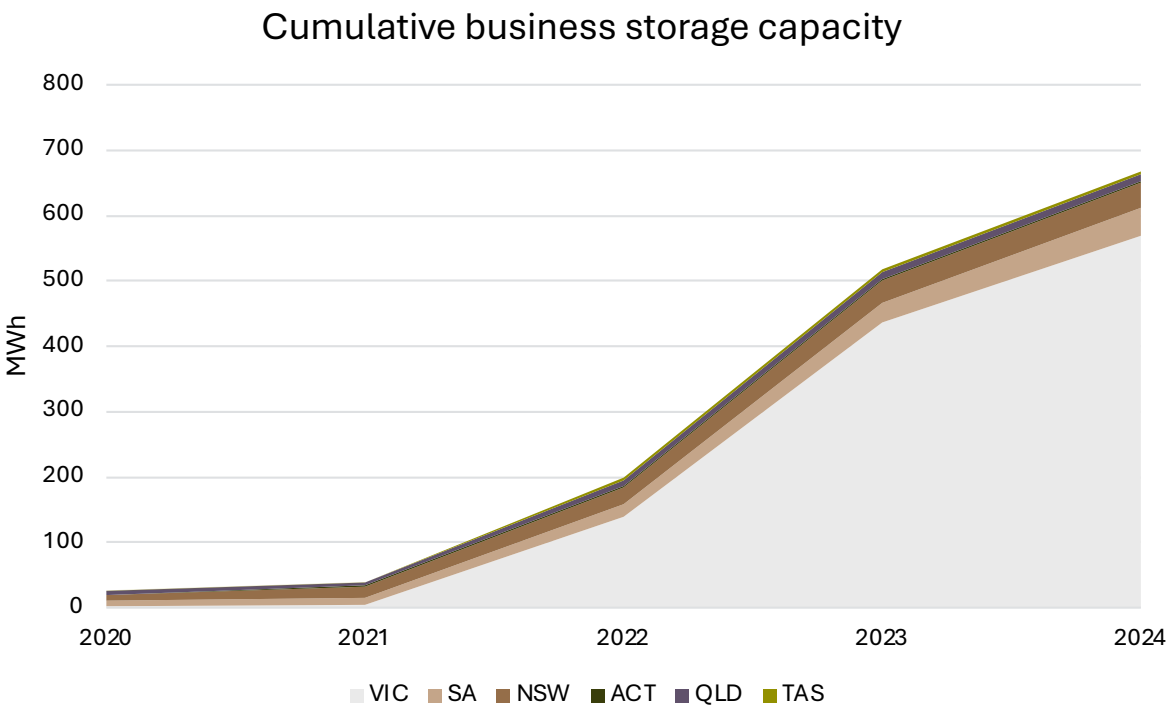


Figure 4 – Installed business storage capacity[18]

18 AEMO, Distributed Energy Resource Register

Business loads are projected to grow significantly

At the same time, business consumption is projected to steadily grow by 61 per cent on average across states from 2025 to 2054 (Figure 5) – indicating that it will become increasingly important to enable this sector to enjoy the benefits of rooftop solar PV and battery technology.

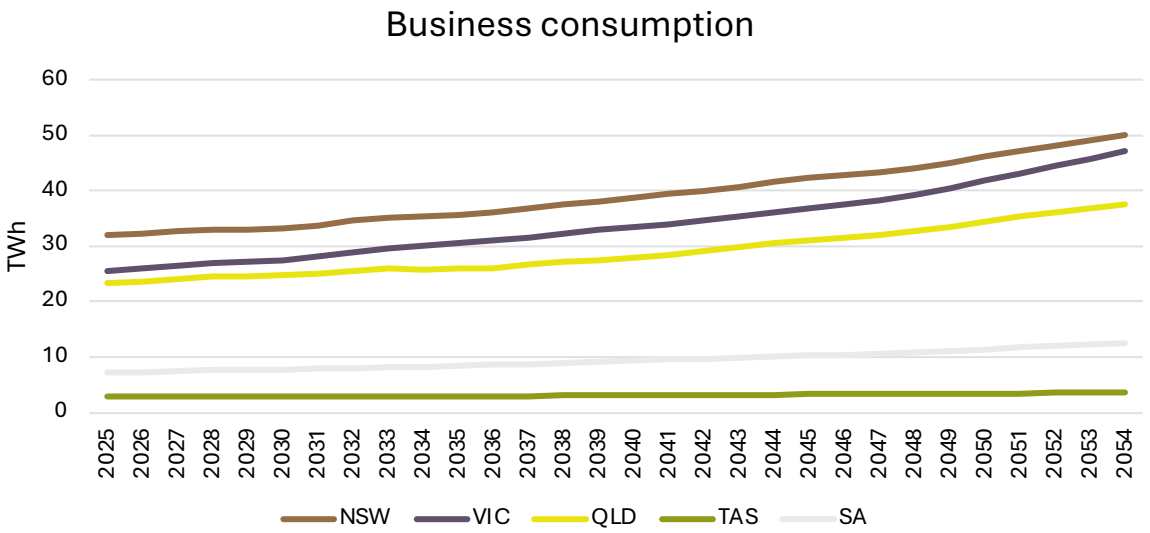


Figure 5 – Business consumption[19]

Low-cost electricity is being recognised globally as the foundation for industrial competitiveness, job growth and economic prosperity. For example, Australia's Future Made in Australia plan emphasises that abundant cheap renewable energy will underpin new industries and up to 400,000 new jobs by 2040[20,21].

By reducing operating costs for manufacturers, data centres, retailers and other businesses, C&I CER helps businesses stay competitive, expand operations and preserve or create jobs.

19 AEMO, 2024 ISP, Central

20 Australian Government, Treasury, Budget 2024-25 Fact Sheet: A Future Made in Australia, May 2024

21 ACTU, Future Made in Australia investment to deliver hundreds of thousands of new jobs by 2040

Case study: CER opportunities for data centres in Australia

Data centres merit special attention as a fast-growing segment of C&I load in Australia. Electricity demand from these facilities is expected to surge, with annual electricity demand growing from 3.9 TWh in FY2025 to 12 TWh by FY2030, and 34.5TWh by FY2050[22]. This boom creates a challenge for integrating these large loads – but also provides an opportunity to shape the development of C&I CER.

Data centre development overseas has already seen proactive measures to mandate on-site renewable energy resources and mitigate reliability risks and avoid additional costs associated with system augmentation. For example, Ireland's energy regulator has proposed that all new data centre connections must include onsite or proximate generation or storage equal to their demand and be available to the grid during system-stress events[23]. Elsewhere, major technology companies have pursued reliable clean energy supply for data centres[24], driven by corporate sustainability targets. This includes leveraging the flexibility of CER for cooling and storage to support the grid during peak/ midday minimum demand periods.

Onsite CER can play a valuable role in ensuring reliability and backup electricity supply for data centre operations. By embedding C&I CER as part of data centre development, Australia can accommodate these energy-hungry hubs without jeopardising reliability or burdening other consumers with additional costs and help turbocharge capital for new renewable projects[25], while minimising the risks of over-engineering the grid to accommodate new data centres[26]. If done right, data centres could transform from a grid liability to a grid asset, absorbing excess solar, providing network services and driving investment in new renewable capacity[27].

22 Oxford Economics Australia, Data Centre Energy Demand, July 2025

23 Commission for Regulation of Utilities, New Electricity Connection Policy for Data Centres, February 2025

24 Reuters, AI boom spurs Big Tech to build clean power on site, February 2025

25 https://www.cefc.com.au/case-studies/powering-microsoft-data-centres-with-walla-walla-sunshine/

26 https://www.wfae.org/energy-environment/2025-03-05/study-suggests-utilities-may-be-overbuilding-and-overspending-to-accommodate-new-data-centers

27 Renew Economy, Data centres are coming, hungry for wind and solar, and will help avert rooftop PV shutdowns, July 2025

C&I CER is a win-win for consumers, government and the system

C&I CER - such as rooftop solar, batteries, and controllable loads - deliver benefits that extend well beyond the businesses that install them. They reduce operating costs, enhance flexibility for both the business and the grid, lower network costs for all consumers, and can be deployed faster and more efficiently than many large-scale alternatives.

Lower energy bills and greater cost control

Rooftop solar PV and batteries can directly and significantly reduce a business's energy bills[28] and provide greater control of energy costs. This is especially the case for C&I customers, who are likely to have specific contracts with networks and retailers that have a time-of-use component[29].

Adding batteries will add yet more value particularly as time of use tariffs become more common place. According to Dexus, installing a 200-kilowatt-hour (kWh) battery in the base build of a new 20,000 sqm warehouse will cut energy costs by $92,000 a year[30]. Unsurprisingly, nine out of ten prospective warehouse tenants now show interest in warehouses with embedded energy solutions[31] that will reduce their cost base.

Flexibility for businesses and for the grid

Behind-the-meter batteries provide instant backup critical business loads and processes, avoiding costly downtime. These batteries, smart inverters and controllable loads turn large sites into dispatchable resources, with 'orchestration' measures to deliver system and/or market benefits, via direct control or incentivisation through retail and/or network tariffs[32]. Critically, this flexibility can help to reduce peak demand charges.

In addition, advanced inverters deliver voltage and frequency support that improves power quality for sensitive equipment - an increasingly valuable service as inverter-based generation rises on the grid[33].

Avoided network augmentation and lower costs for all electricity users

Large behind-the-meter resources can postpone or negate expensive poles-and-wires upgrades by distribution network businesses. Comprehensively modelling the broad economic benefits of CER is difficult, but it is estimated that this could avoid $11 billion in distribution network by 2040[34]. These avoided capital expenditure savings flow through regulated revenue to lower network tariffs for every customer.

For example, batteries located at vehicle depots act as buffers, allowing electric fleet vehicles like trucks or buses fast-charge without triggering expensive connection upgrades[35]. Logistics operators trialling battery-backed hubs have reported that this avoids peak demand charges and grid capacity constraints[36].

28 Nexa Advisory, Empowering Consumer Energy, June 2025
29 Nexa Advisory, Accelerating C&I rooftop solar and batteries is a 'win win' Discussion Paper, June 2024
30 AFR, Batteries to power up warehouse pipeline as big as 40 MCGs, 29 April 2024
31 Ibid
32 AEMC, Unlocking CER benefits through flexible trading, August 2024
33 CSIRO, Energy storage in Australia
34 Baringa Partners, Potential network benefits from more efficient DER integration, June 2021
35 ARENA, Next Generation Electric Bus Depot, April 2023
36 Fleet HV News, Battery-Backed Charging Hubs Key to Truck Fleet Electrification, June 2025

Alignment of C&I loads with solar generation captures greater value for these installations

Unlike homes where peaks loads are outside peak solar times, a significant proportion of C&I consumers use their energy in during the day. The alignment of this load and rooftop PV generation enables greater self-consumption, meaning there is a smaller risk of 'spill' and greater potential reduction in energy costs, relative to residential installations.

Faster, lower impact deployment, at similar cost to large-scale solar installations

Commercial and industrial CER installations can be delivered faster than large-scale wind and solar developments – taking weeks[37] rather than years[38]. This is because larger projects must secure greenfield land acquisition, environmental approvals and social licence with local communities.

C&I CER installations do not face these land-use and social licence barriers, and have a smaller physical and environmental footprint - resulting in faster, easier installations and fewer materials. However, many C&I properties are managed under strata title, which does mean they face the same challenges to solar adoption as residential apartments and semi-detached buildings. Likewise, a large proportion of C&I buildings are rented, creating the same split-incentive problem that hinders solar uptake in leased residential properties. As well as these shared barriers, the C&I sector contends with a number of unique obstacles. Addressing these issues requires the involvement and influence of various stakeholders to actively work to identify and implement viable solutions.

Distribution-connected C&I projects can be installed at a similar price as Utility-Scale solar; a 1 MW rooftop PV array comes in at $1.30 / W, compared to $1.45 / W for a 20 MW solar farm[39]. These capital efficiencies are extended where these installations use existing network connections.

In addition to the clear and readily articulated benefits, the opportunity must also be framed in terms that attract large-scale capital investment. At present, complexity and lack of scale inhibit participation by institutional investors. Addressing these barriers could transform C&I CER from a niche opportunity into a mainstream investment class, unlocking significant private capital and accelerating deployment.

37 Go Solar, Go Green, Empower Your Business with Commercial solar system, April 2023

38 WattClarity, Not all renewable projects are created equal: Why approval times vary dramatically across Australia, July 2025

39 AEMO, 2024 Energy Technology Cost and Technical Parameter Review – Mid Size Solar PV and BESS, May 2025

Case Study – Caribbean Business Park

Caribbean Business Park in Melbourne's east is a clear example of the potential for C&I CER. Caribbean Business Park houses some 50 large industrial buildings along with five commercial office towers, making it one of the most significant commercial precincts outside of the CBD.

In partnership with an innovative C&I project orchestrator, MetroElectro, Caribbean Business Park has begun the process of unlocking the latent CER potential of approximately 300,000 square meters of flat, unencumbered roof space. This is enough space to host up to 50 MW of solar panels[40]. If unlocked, the Park has the potential to generate a substantial amount of energy, becoming self-sufficient, and potentially a net exporter of power.

One business in the Park is contemplating a small solar installation. The building could house up to 400 kW of solar panels. However, because the current Small-scale Technology Certificate scheme is only eligible for installations under 100kW – it is difficult to develop a feasible business case for installations of this size.

A larger installation would be eligible for Large-scale Generation Certificates, this scheme is slower, riskier and costlier for C&I businesses to pursue due to associated compliance and reporting obligations.

MetroElectro has worked to develop a much larger system, firmed with battery storage, to unlock the full potential of the site. However, the combination of uncertainty around grid connection and financial value stacking means the project will likely be downsized or delayed – or both.

Critically, unlocking this potential would minimise the need for network augmentation by the local distribution network service provider – AusNet. The Park is located in a distribution area spanning ten zone substations which are supplied by a single radial 66kV line; outages of this line would result in unsupplied electricity for all customers in this area. It is currently uneconomic for AusNet to duplicate this line and therefore recognises the potential for network support and other innovative options to mitigate supply risks[41] - such as the development of C&I CER.

40 Nexa estimate based on conservative estimate of 6 m2/kW.

41 AusNet, Distribution Annual Planning Report 2025-2029, December 2024

There is untapped potential for businesses across C&I CER and DSP

C&I businesses have significant untapped potential to deliver demand-side participation (DSP) - where electricity consumers adjust their consumption in response to market prices, network signals or dispatch instructions - through both controllable loads and coordinated use of their CER. These capabilities can deliver reliable, fast-acting capacity to the grid – particularly during periods of peak demand - while providing direct financial benefits to participating businesses.

The Wholesale Demand Response Mechanism (WDRM) is currently the only wholesale market pathway in the NEM that directly compensates participants for reducing load. Despite its promise, uptake remains modest: as of mid-2025, only 74.4 MW of registered capacity (across 20 WDR units and 158 NMIs) has been enrolled, with 240 MWh dispatched between July 2024 and May 2025. Participation is dominated by a small number of demand response service providers (DRSPs), and activity is concentrated in NSW and Victoria. This highlights both the potential for growth and the barriers that currently deter C&I participation.

While the WDRM has proven the technical feasibility of dispatchable demand reduction, it remains underutilised, due to several factors including:

- Eligibility restrictions – many multi-site or multi-connection point businesses are excluded under current rules.
- Baseline complexity – the requirement to demonstrate load reductions against an historical baseline can be administratively complex.
- Limited market visibility – the value proposition of WDRM participation is not well understood by many C&I operators.

There is a clear opportunity to unlock additional value for C&I CER installations through DSP appropriate, coordinated reforms by market bodies. This has been reflected in recent reforms by the Australian Energy Market Commission (AEMC) and the independent *NEM Wholesale Market Settings Review* – which acknowledge that there is clear need to enable flexibility, visibility and participation of these resources in the market.

Barriers to C&I CER uptake

We have previously discussed several structural barriers preventing investment in solar PV and batteries for C&I consumers – including organisational, tenancy and financial barriers[42]. However, we have focused on those related to the energy system for the purpose of this report.

Despite strong potential, C&I CER uptake is constrained by current settings: incentives remain supply-side, large-user tariffs don't reward flexibility and connection processes are complex and costly. Together, these factors suppress investment in C&I-scale solar, batteries and demand response – leaving this resource untapped.

For institutional investors and large landlords, C&I CER deployment typically represents a non-core activity. Consequently, the incentives and ease of participation must be comparable to those available for residential solar and battery installations.

Once these parties, or their tenants, have maximised behind-the-meter opportunities – which, on average, utilise only around 20 per cent of available roof space and have negligible impact on usable floor area – there is limited motivation to pursue further solutions. This dynamic helps explain why major market participants, such as AGL and Clean Peak, continue to seek critical mass through large-scale projects in an otherwise highly fragmented market.

Gaps in incentives for large flexible C&I loads

Current incentive mechanisms are largely supply-side focused and do not adequately support the C&I segment or reward demand flexibility at scale.

As mentioned earlier in the report, the CIS underwrites revenues for new large-scale renewables generation (wind and solar) and dispatchable capacity such as large-scale batteries. C&I-scale installations – such as VPPs - are ineligible, and the scheme does not provide any support for large flexible loads.

Similarly, the segment is not supported through either the Small-scale Renewable Energy Scheme (SRES) nor Large-scale Renewable Energy Target (LRET). C&I installations are above the threshold for SRES eligibility. Demand-side flexibility and load shifting enabled by C&I is not eligible for Large-scale Generation Certificates (LGCs) and therefore do not earn tradeable certificates under the LRET.

The WDRM - introduced in 2021 to enable registered Demand Response Service Providers to bid flexible demand into the NEM and be paid at spot price - is also limited. This mechanism has been designed with an arbitrary threshold that excludes a significant portion of C&I energy users from participation. The mechanism also does not provide underwriting or capital support for installing flexible systems or loads.

Without clear, bankable revenue mechanisms, large flexible C&I loads remain an untapped grid resource. This represents a missed opportunity to integrate more renewable generation, reduce reliance on peaking generation, and lower system costs. Current policy leaves a structural gap between what these loads can provide and what the market rewards.

42 Nexa Advisory, Accelerating C&I rooftop solar and batteries is a 'win win' Discussion Paper, February 2024

Outdated tariff structures for large C&I customers

Tariff reform in the NEM has been underway for over a decade, yet most C&I customers remain subject to outdated pricing structures that have changed very little in more than a decade[43]. These legacy structures were designed for a centralised, one-way energy system with inflexible loads, and fail to fully recognise the capabilities of modern CER.

Historically, large C&I tariffs have relied on maximum demand charges - often set by the highest half-hour or 15-minute interval in a billing period - paired with comparatively low volumetric charges[44,45]. This structure was sensible when peak demand was the primary driver of network augmentation and load flexibility was rare. However, it now penalises a single short demand spike while ignoring the potential for sustained load management, rapid response capabilities, or targeted support during periods of network stress – if adequately incentivised.

Since the mid-2010s, the push for cost-reflective tariffs has concentrated on residential and small business tariff changes, driven by equity concerns and consumer engagement priorities, with less visible progress for large users. For example, recent tariff innovations have introduced export pricing for residential and small business customers, while high-voltage/sub-transmission large customers remain on standard demand/connection tariffs without equivalent export credits[46]. Large C&I customers - often already equipped with interval metering - have been treated as sophisticated energy users capable of managing under existing arrangements, leading to minimal targeted redesign.

While residential customers have begun to see dynamic export tariffs and Time of Use (ToU) trials, large C&I tariffs rarely offer credit for exports or for providing network services such as voltage control or frequency response reducing the potential economic returns from batteries and other flexible CER.

Under the National Electricity Rules, DNSPs file Tariff Structure Statements every five years, but reforms affecting large-user classes have tended to retain legacy designs with only incremental changes, while 'two-way' elements (e.g., export rewards) have been rolled out first for smaller customer classes.

As a result, while competitive market offerings - such as demand flexibility programs, behind-the-meter orchestration, and virtual power plants - are emerging for large users, these services are typically layered on top of static network tariffs, resulting in the full network value not being reflected in the price signals faced by these customers.

43 AEMC, Distribution Network Pricing Arrangements, November 2013

44 AEMC, Final determination - Access, pricing and incentive arrangements for DER, August 2021

45 SA Power Networks, Large Business Demand Tariffs (Network Charges), July 2020

46 Ausgrid, Tariff Structure Statement Compliance Document, November 2023

Complex and costly network connection processes

A major impediment to C&I CER deployment is the complexity, cost and uncertainty associated with connecting systems to the electricity grid. This process, governed by the DNSPs, involves several stages that can delay projects and inflate costs.

The cost of connecting a large, embedded generation system can vary widely depending on location, voltage level, and required network upgrades. CitiPower and Powercor highlight that a typical embedded generation system requiring an 11kV underground extension can cost between $1.7 million (urban) to $4 million (CBD) per km, excluding any broader network augmentation[47]. Additionally, DNSP-specific costs, together with technical study fees, can significantly increase project budgets with limited upfront transparency[48,49].

There is also a lack of transparency on the criteria for connection applications. The DNSP processes vary and are unpredictable, resulting in extended timeframes that run over weeks or months. While the AEMC introduced a clearer embedded-generator connection process with defined timeframes under the NER[50], those timeframes can be extended by agreement, in practice, differ by network.

Many projects and government programs – such as Solar Victoria's battery program[51] - also require DNSP pre-approval before installation and must progress through technical assessments, execute a connection agreement, and meet metering/safety requirements prior to energisation.

Although industry has published National DER Connection Guidelines to improve consistency, they are voluntary, so adoption and detail still vary by DNSP[52].

This variability introduces uncertainty into project timelines, complicating planning and financing decisions for C&I installations.

47 CitiPower & Powercor, Renewable generation project connection

48 Ausgrid, Connection Application Price Guide, 1 July 2024 to 30 June 2025

49 Energex, Connecting to the Energex Network Fees and Charges 2025/26

50 AEMC, Connecting Embedded Generators, October 2014

51 Solar Victoria, FAQs: Solar batteries

52 Energy Networks Australia, National Connection Guidelines

Recommendations to unlock the untapped potential

Australia can unlock the potential of C&I CER by addressing the key market and regulatory barriers preventing its uptake. This requires coordination between the federal and state governments to deliver programs that align with their various renewable energy and emission reduction targets.

We recognise that there are a number of reviews underway to address some of the barriers discussed above. For example, the Federal Government is currently reviewing the Capacity Investment Scheme to include aggregated resources such as VPPs. While this is a timely and important review, limiting the scope to VPPs could result in a missed opportunity for capturing the broader benefits from flexible loads and broader demand-side response.

We urge federal and state energy ministers to prioritise the untapped C&I customer segment. Our recommendations below outline practical, targeted solutions to unlock this untapped potential.

1. **Create a dedicated Capacity Investment Scheme tender to underwrite demand-side participation by C&I customers**

Create a dedicated tender within the Capacity Investment Scheme (CIS) that contracts demand-side capacity from large flexible C&I loads. This is intended to underwrite revenue for reliable, dispatchable resources (either at a single site or aggregated) that can curtail or shift load during peak demand periods, improving reliability and resilience, reducing peak prices, and avoiding the need for network augmentation.

Including aggregated storage as part of future CIS auctions should also be subject to a simplified application process to ensure these smaller C&I proponents are not disadvantaged compared to larger, better resourced projects. The minimum threshold should be reduced below the current 30 MW (e.g., to 1 MW), with administrative bundling to enable smaller C&I installations.

The dedicated auction rounds could be held separately from larger Generation or Dispatchable CIS auctions, to ensure this segment is appropriately represented, whilst maintaining rigour around the assessment of project merit. We note this may require a different support structure to that of large-scale generation or dispatchable projects.

We recognise that this mechanism is transitory. However, it provides a short-term solution which can be implemented in addition to longer-term, enduring support, as described in the recommendations below.

2. **Expand Clean Energy Finance Corporation (CEFC) and Australian Renewable Energy Agency (ARENA) support**

The Federal Government to work with the CEFC and ARENA on targeted grants.

Scale concessional finance and grants, expanding CEFC and ARENA grants targeted at C&I installations, including innovative vehicle charging infrastructure. This should support innovation in CER aggregation and energy management systems required for these resources to be better integrated into the market.

3. Accelerate reforms to value energy services and contract markets to facilitate investment

Prioritise the implementation of Recommendations 2-3 of the NEM Wholesale Market Settings Review, requiring a broader range of price-responsive resources to be visible or dispatchable to participate in price formation, and facilitating market participation to enable consumers to benefit from being price responsive. This includes:

- Recommendation 2 – enabling a wider set of price-responsive resources - large C&I loads, CER/VPP aggregations and medium-scale batteries - visible or dispatchable for price formation by 2030, using the new Voluntarily Scheduled Resource (VSR) reforms and related pathways, with a structured support framework to implement these reforms and better include these resources into the market.
- Recommendation 3 – facilitate market participation to enable consumers to benefit from being price responsive by prioritising technical standards and data-sharing under the National CER Roadmap.

This would enable businesses to secure long-term revenue streams for demand response, storage dispatch and other system support services.

The VSR will be the key enduring mechanism for C&I CER following the cessation of the CIS. Effective design and implementation of these reforms must therefore be prioritised by state and federal governments.

4. Strengthen DSP mechanisms, including the Wholesale Demand Response Mechanism

In addition to the recommendations in the NEM Review, Ministers should task the AEMC and market bodies to:

- **Review the WDRM baseline eligibility thresholds.** In the AEMC's final determination on the WDRM baseline eligibility policy[53], AEMO noted it would review the baseline eligibility thresholds annually, starting in 2022, to ensure that they do not unnecessarily restrict WDRM participation. While AEMO has undertaken annual reporting, these reviews did not include public consultation or result in changes to baselines - despite poor uptake of the mechanism. A formal, transparent review is now critical to assess whether the current thresholds remain appropriate – and should be undertaken through an open, consultative process with stakeholders.
- **Amend the NER to enable sites with multiple connection points to participate in the WDRM.** Sites that have multiple, electrically-connected connection points are not eligible to participate in WDRM. Many C&I customers have sites with multiple, electrically connected connection points such as data centres. These sites are currently not eligible to participate in WDRM under existing arrangements. A rule change has been submitted to the AEMC by Enel X but has not been formally initiated[54].
- **Implement changes to allow sites with solar, and portions of variable load, to participate in the WDRM.** Sites with solar, or that have portions of load that are highly variable, do not meet the probability of load requirements to be eligible to participate in the WDRM. This issue could be addressed through providing flexibility in the location of WDR response, and associated metering, such as that being contemplated through the Flexible Trading Arrangement (FTA) rule change.
- **Review the threshold for DNSP endorsement of aggregations (currently 5 MW).** There is no real basis for this threshold and the endorsement process is complex to navigate. Unfortunately, the endorsement framework only serves to disincentivise aggregation and reduce incentives to participate in the WDRM.

53 AEMO, Baselines Eligibility Compliance and Metrics Policy, May 2021

54 AEMC, Expanding eligibility under the WDRM, April 2022

5. **Uphold a competitive playing field for C&I CER, ensuring DNSPs are not competitors in the delivery of these assets**

- **Strengthen data transparency obligations on DNSPs** by enforcing minimum transparency requirements criteria and obligations for all DNSPs across NEM jurisdictions to allow open access to network data.
    - This should also embed obligations for joint planning transparency between DNSPs, AEMO, and TNSPs - including updating the Distribution Annual Planning Report (DAPR) template to ensure the publication of estimated costs of network upgrades, locational investment signals and non-network assessment outcomes.
- **Streamline and reduce cost of grid connections** by introducing a standardised, transparent connection process and timeframes in negotiating Service Level Agreements (SLA) with connecting parties, enforcing penalties for excessive delays. This should also include:
    - Streamlining connection requirements and fees by establishing standardised technical requirements to prevent excessive and unpredictable connection fees.
    - Developing flexible connection options by offering flexible connection arrangements to optimise the use of latent network capacity through controllable load management of smart infrastructure, with customers responding to network forecasts and through clear tariff signals.
- **Develop tariffs that recognise smart infrastructure** by tasking the AEMC with evaluating the tariff regulation of DNSPs, with regard to customers of all types and consumption thresholds.
    - This should include reform to enable: innovative tariffs such as energy-only charges for new, low utilisation sites; solar soak incentives; and load control incentives during critical events. Innovative tariffs should be available for both low and high utilisation sites.
    - Network tariffs that include blunt demand or capacity charges are high cost and unsustainable for consumers and new connections. These ignore the substantial network benefits provided by CER. While the AEMC is currently undertaking a pricing review, it is largely focused on residential and small business consumers and omits larger C&I connections. This is an area that has had limited to no innovation for decades and therefore is no longer fit for purpose.

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