

Trajectory for Low Energy Buildings National Construction Code 2025 & 2028

Achieving a net zero emission building sector

Chris Lehmann & Georgia Holmes
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Master Electricians Australia (MEA) is the trade association representing electrical contractors recognised by industry, government and the community as the electrical industry's leading business partner, knowledge source and advocate. Our website is www.masterelectricians.com.au

Throughout this submission MEA will argue that to achieve net zero emissions by 2050 we will need swift regulatory and legislative action towards implementing distributed energy resources (DER). We advocate for mandatory readiness for installation of DER technology in all new builds, as in happening in the NCC. Pre-existing buildings should have a slow integration towards electrification and DER readiness over a medium time frame, relying on triggers such as change of ownership or major renovations.

MEA is not commenting on building materials or construction methods, we are giving our views on the benefits of DER and how integration into our built environment is critical for increasing the trajectory towards low energy buildings.

The use of the term DER has recently become interchangeable with Consumer Energy Resources (CER) reflecting the reality that there is a large and growing amount of consumer electrical infrastructure that remains chronically underutilised and its capacity to contribute to the electrical grid and price stability is largely ignored. We will refer to it as DER throughout this submission.

We will explain the benefits of DER including clean energy generation, EV support through bi-directional charging, grid stability and achieving altered consumer behaviour through time of use (TOU) tariff price signalling.

MEA stress the importance of recognising and utilising electrical licenced contractors as accredited service providers (ASPs) to be at the forefront of installing and maintaining DER related technology. Using the private sector will not only ensure timely and efficient installation, but also create a competitive market driving down energy prices.

Questionnaire

[Update to the Trajectory for Low Energy Buildings](#)

Q1. What should a low energy, net zero carbon residential and commercial building sector look like?

MEA are strong advocates for many more privately owned DER assets to be installed within residential and commercial buildings. DER assets are used to naturally generate, store, and utilise renewable energy, and presents a mitigating solution to carbon reduction, and reduces electricity operating costs.

Examples of DER include:

- Rooftop solar photovoltaic units
- Wind generating units
- Battery storage
- Electric vehicle batteries

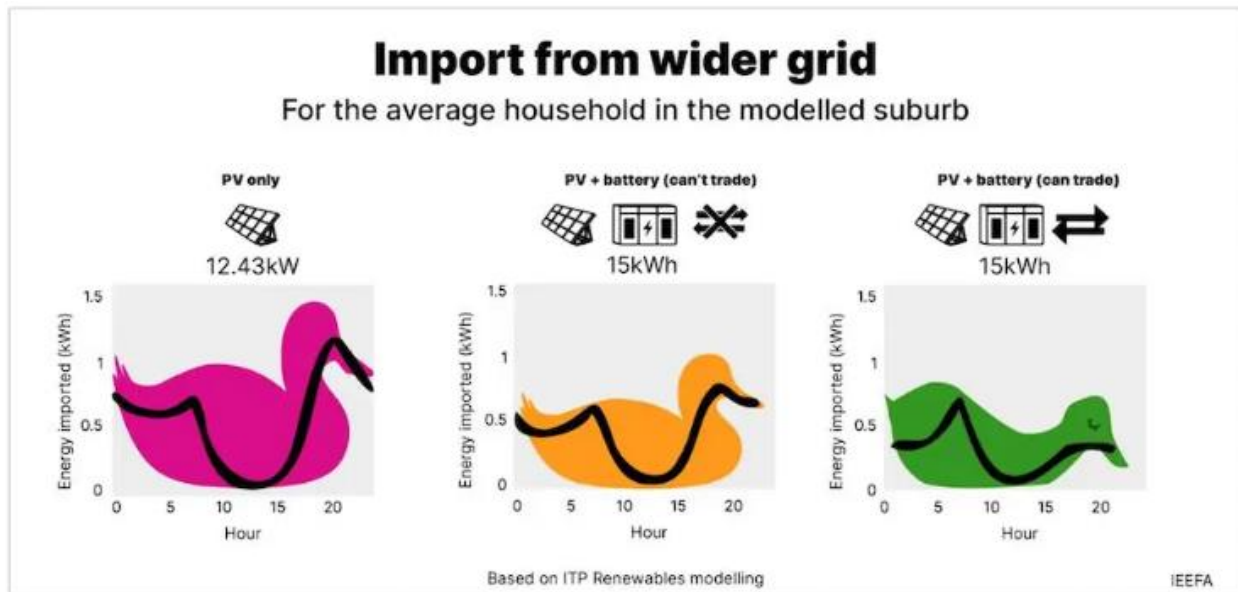
Consumers gain the power of choice giving them the ability to take control of their energy and are enabled to enter into trading arrangements that could shift loads, using power (soaking) when it is cheapest for flexible loads (hot water, ovens, EV charging, etc) and delivering power back (sourcing) from storage sources (batteries, bi-directional EV's) when energy prices are higher, giving households and businesses the ability to pro-actively reduce their overall power



costs. DER is to be limited to flexible loads while the traditional network should continue to be utilised for inflexible loads (i.e. fridges, life support, etc).

The dream of changing the energy demand curve (the so called “ducks back”) by taking the excess/cheap energy produced in the middle of the day, and using it during times of peak demand, thereby flattening the demand curve and stabilising electricity prices can be realised in a reasonably short time period if we make some rational, sensible decisions. The technology is here now, the regulations just need to catch up.

The below image demonstrates the ducks back¹:



When utilised in combination with Time of Use (TOU) tariffs, Home Battery Storage and Home Energy Maintenance Systems, consumers are incentivised to source their own energy through DER and store it until peak demand time. They are faced with the choice to utilise the energy to avoid paying high prices or send back to the grid to receive rebates. These financial incentives will alter consumer behaviour thereby inherently reducing carbon emissions.

Q2. What should the scope of a net zero carbon buildings sector include?

In light of our response under Q1, MEA advocate for scope 2 electricity to be included in a net zero carbon buildings sector. Implementation of DER allows for demand flexibility which will be optimised by supporting TOU tariffs as consumers respond to price signals. The onsite generated energy can be transferred back to the grid assisting supply to meet demand. This enhances the stability and integrity of the grid.

¹ 'Saturation DER modelling shows distributed energy and storage could lower costs for all consumers if we get the regulation right' *Institute for Energy Economics and Financial Analysis* (2023)

Q3. What changes / opportunities / risks do you see with the proposed Objective for the Trajectory Update of:

Objective: to deliver a low energy, net zero emission building sector by 2050.

Giving regard to:

- increased energy and climate resilience.
- an equitable transition to net zero emissions.
- an orderly workforce transition.

Changes:

Government Regulations and Legislation

Firstly, government policies need to change to support and enhance DER implementation. MEA recommend updating regulations and legislation to enable secondary settlement points at private residential and commercial premises with their own separate meters to allow for separate measurement and identification of flexible loads from DER assets, and to allow for peer-to-peer electricity trading. There is no incentive for retailers to action such change and without the secondary settlement points DER benefits cannot be fully optimised.

Smart Meters

For DER to be effective, all buildings will need to be installed with smart meters. Regulation currently ensures that all new builds are installed with smart meters, and changes in regulation to incentivise the installation of smart meters in existing dwellings when works are undertaken to install DER assets, such as solar PV, will significantly assist in the change towards low energy buildings.

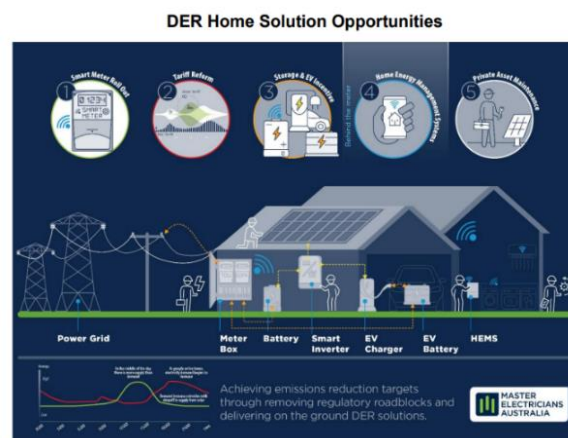
Time of Use (TOU) Tariffs

Net zero emissions in the building sector is going to require significant alteration to human behaviour. MEA believes TOU tariffs is an effective solution to accelerating such change. TOU allows consumers to respond to price signals, using grid energy when it is cheap and either utilising or giving back privately generated solar energy when prices are high. The National Electricity Market can therefore influence consumer use of energy through price signals.

Opportunities:

Electric Vehicles (EVs)

We believe EVs present opportunities for the energy network. Bi-directional charging enables EVs to soak the excess supply of PV sourced energy during daylight hours which can be later used to supply energy for flexible loads at later points in the day as needed. Installation of EV infrastructure in homes and businesses in concert with Home Energy Management Systems (HEMS) for residential buildings and Building Management Systems (BMS) for commercial businesses would increase the load profile stability of the network.



Risks:

Smart Meter Rollout

The Power of Choice (POC) metering reforms in 2017 were designed to promote choice and efficiency in the delivery of energy to the end point consumer. While the architecture of choice has been partly delivered on, more work needs to be done in concert with tariff reform in a DER environment to recognise the potential of smart meters. The promise of efficiency has not yet been achieved, and the delivery of metering services has been made considerably more complex with an overall increase in delay for new connections and metering changes. An increase in layers of administration and stakeholders with the advent of POC has meant that connection times and changes to metering are taking longer. This bottleneck in the installation and replacement of meters is slowing down the transformation of the grid and provision of more consumer choice. MEA recommends allowing licenced electrical workers to be recognised as Accredited Service Providers (ASPs) to deliver on metering reforms. Without electrical licenced contractors' involvement in the DER transition, there is a risk that the energy transition will be slowed and Australian jurisdictions will not be able to meet stated targets.

Excluded Groups

Certain groups pose problems for electrification –

- *Renters:* without mandating electrification of households, a significant portion of renters will be unable to directly participate in DER as landlords have no personal benefit to invest in such changes. Government should introduce incentives for landlords to implement DER within their residential properties such as tax rebates or provide deadlines for installing DER into rental properties with a one-off government rebate to assist with costs.
- *Low-income households:* for this group the cost of investing in DER will be difficult if not impossible. We recommend Government focuses efforts on this group to ensure they are financially capable of installing DER and become educated towards its benefits. Government should introduce rebates for households with income under a certain threshold. We highlight that utilising licenced electrical contractors in the electrification process will create natural market competition thereby keeping installation prices low, particularly beneficial for low-income households.
- *High-rise occupants:* Installing DER technology such as Solar PV and smart meters is more difficult for high-rise buildings. Investment costs of implementing solar PV (and other such DER) is the body corporate's decision. We recommend Government implement policies mandating body corporates to approve DER installations which benefit all residents. Further issues in metering can raise issues, however, we believe utilisation of pre-existing embedded networks is the solution.

Traditional Network Costs

Another risk that needs to be managed is the cost of network maintenance for those who have not yet transitioned to DER. As more consumers move away from fossil fuel energy, the network costs for those remaining on the traditional one-way network will become more expensive.

Q4. What are you / your sector / your constituents already doing to transition towards low energy, net zero carbon building sector?

Solar PV installations are becoming increasingly mainstream amongst private residences with 3.4 million in Australia currently. Furthermore, the uptake of EVs is expected to significantly increase over the next decade. MEA have been strongly advocating that using these two low-



carbon technologies together can complement one-another through bi-directional EV charging. This will not only assist with the charging capacity as DER will enable household infrastructure to charge the vehicles through solar energy but also reduce grid demand thereby enhancing its stability and integrity.

Q5. What policy opportunities / solutions would you recommend for governments, industry and consumers to transition?

Below is an outline of the policy solutions we have recommended throughout this submission:

- Mandating all new homes to be equipped with DER technology. For pre-existing buildings, we recommend introducing a slow phased approach into electrification over a prescribed number of years (similar to the approach proposed by the ACT²). This will not only give households and businesses time to financially prepare for the investment but will also prevent installation bottlenecks.
- Installation of secondary settlement points with their own meters on residential and commercial premises to allow for separate identification and measurement of DER flexible loads.
- Introduction of TOU tariffs to send consumers price signals. This will support security and integrity of the grid.
- Allow for bi-directional EV charging to aid with storage and delayed utilisation of excess solar energy.
- Assist the following groups with the transition to electrification:
 - Renters: provide tax incentives for landlords to install DER within their rental properties.
 - Low-Income Households: provide rebates to enable financial investment.
 - High-rise buildings: mandate body corporate acceptance of DER technology installation and enable utilisation of embedded networks for separate measurement and identification of flexible loads.
- Recognition of the role licenced electrical contractors' and their workers have in the following:
 - Solar PV installations
 - Smart meters (to replace traditional meters)
 - Secondary Settlement points
 - Home batteries
 - Commercial versions of BESS

Q6. What policy challenges / risks for government, industry and consumers do you see when transitioning?

Please refer to 'risks' under Q3.

[Updates on the National Construction Code](#)

Q7. What changes to residential and/or commercial energy performance requirements should be considered for NCC 2028, to deliver low energy, net zero carbon buildings?

N/A

² 'DEVELOPING ACT'S INTEGRATED ENERGY PLAN Canberra is electrifying: Towards a net zero emissions city' Act Government (2023)

Q8. What challenges do you see in transitioning to low energy, net zero carbon buildings in the NCC? What solutions would you offer?

The challenges we envision echo those mentioned under 'Trajectory to Low Energy Buildings'. In summary:

- DER implementation for renters, low-income households and high-rises buildings. Please refer to Q3 for our suggestions.
- Efficient and timely network integration allowing the grid to enhance its response to consumers' over-supplying excess energy back to the grid and to minimum demand. We recommend ensuring DNSPs prioritise sufficient levels of investment into DER network integration and ensure that the installation of stand-alone solar power systems are left to licenced electrical contractors in the private market. In doing so, DNSP operating costs will be reduced leading to reduced energy prices.
- The private electrical workforce to action the transition in a timely and efficient manner. MEA strongly advocate recognising licenced electrical contractors with Cert IV and recognition as ASPs to be the industry implementing DER and smart meters.

Q9. What would you / your sector / your constituents need to help transition?

Government policies and regulations need to recognise and support the private sectors capabilities and participation in the electrification process from both a consumer and service provider perspective. Ensuring polices support efficient installation, network integration, inclusivity of users and optimal benefits to be derived from DER will significantly assist with the transition.

The policies needing the strongest prioritisation are:

- Mandating Solar PV and smart meter installation
- Installation of secondary points with their own meters at residential and commercial premises
- Support for EV bi-directional charging
- Ensuring all occupants (tenants, low-income households, high-rise complexes) are positioned to directly utilise DER.

DER related regulations, policies and legislation should recognise the role licenced electrical contractors have in being at the forefront of electrifying Australia. We recommend licenced, trained and insured electrical contractors with appropriate Accreditation are used to install the following in residential and commercial residences:

- Solar PV installations
- Smart meters (to replace traditional meters)
- Secondary settlement points
- Home batteries
- Commercial versions of BESS

Utilising the electrical industry in electrifying Australia will assist in reducing connection times, improve consumer experience, reduce smart-meter roll out costs and help facilitate a swifter transition to a responsive electricity grid that can take advantage of DER policies.



Conclusion

To support a net zero building sector by 2050, MEA promotes the importance of swiftly and deliberately implementing DER policies and legislation. DER assets create clean energy and provide consumers with choice between storing, utilising and/or sending excess solar back to the grid, ultimately reducing energy bills and smoothing the demand curve.

Policies should mandate new builds or major renovations to be 'DER friendly' through rooftop solar PVs, secondary settlement points, smart meters and EV bi-directional charging infrastructure. Legislating these requirements will assist in moving Australia away from fossil fuel.

A combination of DER, TOU tariffs, home battery systems and home energy management systems incentivise consumers to change their behaviours to support the net zero target in response to price signals. It is important such policies and legislation are implemented to encourage the transition and allow for educating consumers on the benefits of DER. We note that DER benefits cannot be fully optimised without residential and commercial buildings having secondary settlement points installed with their own separate meters. Policies need to reflect this.

Consideration needs to be given to groups who may be unable to directly participate in DER, namely rental tenants, low-income households and high-rise complex occupants. We suggest government incentivisation is provided to landlords through tax deductions and low-income households through a one-off rebate. For high-rise complexes we recommend mandatory body corporate acceptance of DER installation and utilisation of the embedded networks.

With the inevitable significant increase in EVs in the coming years, there is going to be a greater need to integrate bi-directional charging infrastructure within residential and commercial premises. Not only will this reduce demand pressures on the grid but will also act as easily accessible home battery units. Introducing EV bi-directional policies is the sensible solution to easily foreseeable grid stability and charging capacity issues.

We emphasise the vital role licenced electrical contractors have within DER integration. It is an underutilised workforce with the necessary base skills to perform these functions. The industry will assist with accelerating the roll-out of DER infrastructure and should therefore be given regulatory recognition.

MEA looks forward to seeing the future of the Australia's Trajectory for Low Energy Buildings and hopes to have provided valuable insight towards the benefits of legislating DER infrastructure to achieve net zero emissions by 2050. We would like to be part of any further discussion regarding the matter.

