

ABN 70 250 995 390

180 Thomas Street, Sydney
PO Box A1000 Sydney South
NSW 1235 Australia
T (02) 9284 3000
F (02) 9284 3456

Friday, 22 March 2024

Committee Secretary

Senate Standing Committees on Climate Change, Energy, Environment and Water
Department of the House of Representatives
PO Box 6100
Parliament House,
CANBERRA ACT 260

Dear Committee Secretary,

Transgrid - Submission to the Inquiry into the Transition to Electric Vehicles

Transgrid welcomes the opportunity to provide a submission to the Standing Committee on Climate Change, Energy, Environment and Water Inquiry into the Transition to Electric Vehicles.

Transgrid operates and manages the high voltage electricity transmission network in NSW and the ACT, connecting generators, distributors, and major end users. Our transmission network is at the heart of the National Electricity Market (NEM) and is vital to achieving NSW Government net-zero emissions targets by connecting diverse low-cost renewable generation to customers, including to serve the growing fleet of electric vehicles in NSW.

Transgrid is supportive of the transition towards electric vehicles which will play a key role in facilitating the decarbonisation of our economy, and help Australia reach its net zero targets. Transgrid as a large Australian employer with active and growing operations across NSW is supportive of efforts by the government to encourage emissions reduction across the nation's vehicle fleet as we are doing in our own fleet. Transgrid's experience with EVs has identified savings through reductions in fuel and servicing costs.

As an organisation Transgrid is committed to the decarbonisation of our economy. Transgrid has set science-based targets to cut emissions and decarbonise our business. These include:

- Reducing Scope 1 and 2 emissions by 60 per cent by 2030, compared with a base year of 2021 and net zero by 2040.
- Reducing Scope 3 emissions from Purchased Goods and Services, and Capital Goods by 48 per cent for every million dollars that we spend on these two categories by 2030, compared with a base year of 2021, and net zero by 2050.¹

To support the achievement of our own emissions reduction targets, we plan to eliminate emissions from our passenger and light commercial vehicle fleet by 2030. Although only a small component of our overall

¹ For more information on Transgrid's planned journey to net zero please see our website [here](#).

emissions profile, reducing emissions in vehicle fleets is a clear and direct action Transgrid can take. Transgrid's efforts to date have included:

- Transitioning 50% of our passenger vehicle pool fleet to fully electric.² At our Sydney West operational centre we expect to have 100% of the 15-passenger vehicle pool fleet fully electric in March 2024.
- Leading the way with a trial investment in the first dual-cab electric ute released in Australia. This trial is a key first step in working towards a 100% zero emissions light commercial vehicle fleet by 2030.

Australia's net zero transition will require a coordinated approach from State, Territory and Commonwealth Governments with efforts across each sector of the economy. To maintain momentum emissions reduction across the economy, we support governments' recent plans to set ambitious vehicle efficiency standards.

In addition to vehicle efficiency standards, we also encourage the Government to consider:

- The benefit of introducing additional sales incentives to encourage uptake and overcome higher upfront costs that exist for zero emissions light commercial vehicles. Providing additional incentives would:
 - bring Australia closer in alignment to comparable overseas markets
 - likely accelerate the availability of additional zero emissions light commercial vehicle options that meet the varied use cases required to serve Australia's heavy industry needs.
- How it can further support increased availability, affordability, and choice of zero and low emissions heavy trucking. Noting that heavy trucking is a significant contributor to the vehicle fleet emissions hence improving the uptake of low and zero emissions options will significantly reduce emissions.

Transgrid considers that electric vehicles, at an aggregated level, have the potential to be an important storage resource that can assist in managing the needs of a transitioning energy system by soaking up excess renewables and responding to renewable generation lulls to firm up supply. AEMO's Draft 2024 ISP forecasts that the coordinated charging of electric vehicles from the grid, and discharging into the grid, will form a significant component of the NEM's future storage resources.

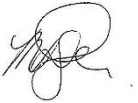
However, there is currently a lack of policy levers that ensures future electric vehicle charging will be managed in a coordinated manner. Transgrid recommends that Government work with industry and the NEM market bodies to ensure that the right market signals and regulatory changes are in place to deliver coordinated charging of the nation's vehicle fleet to efficiently integrate this load into the grid.

Thank you for the opportunity to provide a submission in relation to this inquiry. Transgrid will continue to work collaboratively with local communities, the NSW and Commonwealth governments, local councils, and construction partners to deliver the transmission infrastructure required for the energy transition.

Please find attached our detailed submission which explores the transition to electric vehicles and transmission. If you require further information please contact Sam Martin, Policy Manager, at Sam.Martin@transgrid.com.au.

² Transgrid currently has 36 vehicles in its passenger vehicle fleet.

Yours sincerely,



Maryanne Graham
Executive General Manager
Corporate & Stakeholder Affairs

Submission to the Inquiry into the Transition to Electric Vehicles

A reliable and well-designed transmission network is essential for maintaining a stable and consistent supply of electricity, minimising power outages and voltage fluctuations. As ownership of electric vehicles increases and the demand for electricity in residential areas grows including due to the transition towards electric vehicles, the transmission system must be capable of accommodating this increased load.

We are responding to and supporting AEMO's Integrated System Plan (ISP) through delivering key actionable transmission projects across NSW to support the transition. These projects and our existing transmission infrastructure is critical for the energy system as we transition from fossil fuel generation to new renewable energy sources. Enabling the connection of new and diverse renewable energy resources will be key to ensuring the grid can support the growing electric vehicle fleet with low emissions electricity.

We are also supporting the NSW Electricity Infrastructure Roadmap and the Australian Government's Rewiring the Nation policy, which both support Government's emission reduction and renewable energy targets, as well as working broadly with AEMO, the NSW Government and EnergyCo NSW to accelerate the grid's successful transition.

Supporting domestic and global decarbonisation is good for the nation, the economy and power bills and creates an export which allows the offset of other countries' emissions. A deep decarbonisation of the economy will support 41,000 electricity sector jobs across the National Energy Market this decade.

Transgrid is investing \$14 billion in transmission infrastructure in NSW over the next decade.³ Our major projects will create an energy superhighway, connecting new renewable generation to a strong and flexible network. These projects will:

- increase the capacity to share electricity between states
- improve the reliability and security of electricity supply across the NEM
- increase access to renewable energy sources
- create an economic boost for regional communities through the provision of jobs, training, and local supply opportunities
- help achieve renewable energy targets and the overall decarbonisation of the NEM, while continuing to deliver safe, reliable, and affordable electricity to consumers.

³ Transgrid's expected investment expenditure on transmission infrastructure over the next decade to support the transition was calculated as part of our 2023 System Security Roadmap. For more information on this publication and Transgrid's planned transmission and system security related expenditure see the 2023 System Security Roadmap on our website here - <https://www.transgrid.com.au/about-us/network/network-planning/system-security-roadmap>.

Transgrid's Energy Vision

Transgrid's [Energy Vision](#) explored a power system with a surge in rooftop solar deployments, consumer batteries, electric vehicles and significant electrification. The 'Prosumer power' scenario suggests that even with extremely high levels of distributed energy resources (including many electric vehicles equipped with vehicle to grid technology) and electrification, the transmission backbone is still vital as it would supply 73% of the NEM's electricity by 2050 under this scenario.

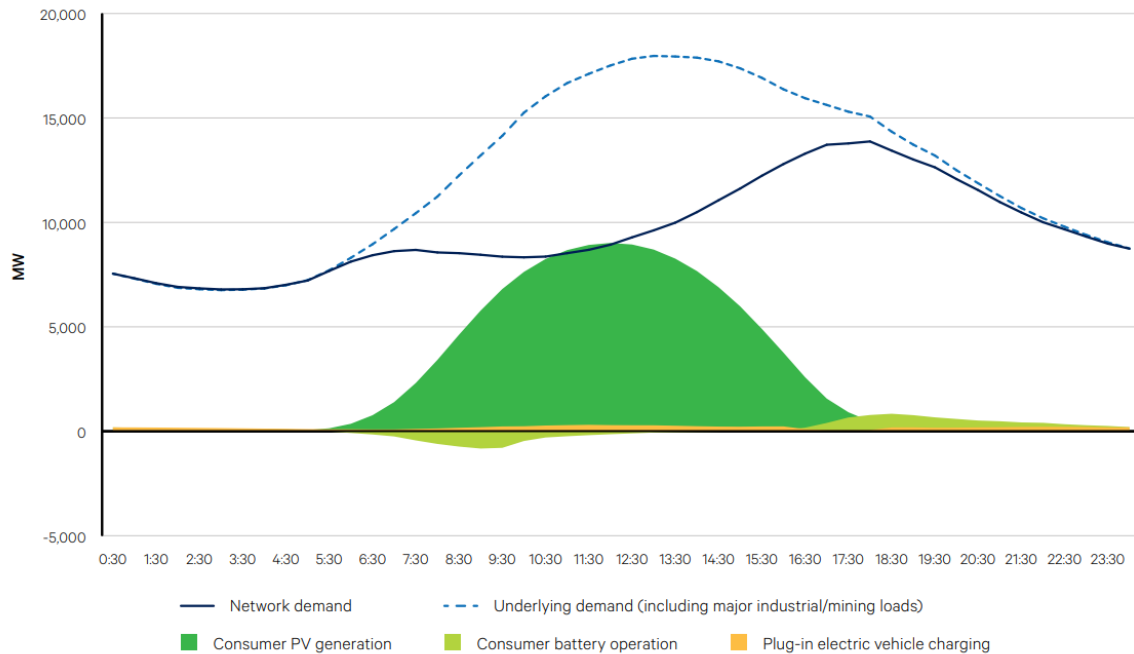
The rapid deployment of transmission infrastructure to facilitate the decarbonisation of the energy system is vital to supporting the transition to electric vehicles as well as cheaper, more affordable electricity for consumers. This will also support broader industrial decarbonisation in Australia. Our Energy Vision identified that Australia has a once in a lifetime opportunity to capitalise on our abundant natural resources to drive economic growth, create new industries and jobs and become a renewable energy superpower.

Increased demand on the grid from increased electrification across the economy, including from transport, will necessitate a heightened focus on electricity infrastructure planning. For increased demand due to electric vehicles, network planning will need to take this into account though any strains on the grid will be minimised by efficient co-ordination of electric vehicle charging. The flexible nature of electric vehicle charging loads are a significant opportunity to increase utilisation of existing assets through charging during off peak periods at night, and during the day to soak up excess renewables that would otherwise be curtailed.

The Role of Electric Vehicles in the Energy Transition

Transgrid's 2023 Transmission Annual Planning Report (TAPR) forecasts modest annual growth in demand for electricity across NSW over the next decade. The consumer energy transition continues to gain pace, with anticipated future growth in the adoption of new energy technologies including rooftop solar PV, battery storage and electric vehicles. We are currently forecasting only minimal changes to overall system load caused by electric vehicle charging over the next ten years, as shown in figure 1 below.

Figure 1: 2023 TAPR typical day profile of the NSW network 2032/33 medium demand forecast



We will continue to monitor electric vehicle uptake and carry out appropriate planning studies to ensure the network is resilient to cater to the needs of electric vehicles in addition to rooftop solar and battery storage. Within the 2024 TAPR we will consider any recent policy developments that may influence electric vehicle uptake over the planning horizon.

AEMO's Draft 2024 Integrated System Plan

AEMO's Draft 2024 ISP outlines the investment in new transmission required to transition Australia to a renewable energy-based power system. This comprehensive roadmap for the NEM identifies committed and actionable transmission projects with a required delivery date for supplying affordable and reliable electricity to homes while supporting Australia's net zero ambitions.

We remain committed to playing our part in delivering the major transmission investments that will provide significant benefits to consumers. As such, we strongly support AEMO's conclusion that there is a clear need for urgent delivery of all actionable transmission projects.

Transgrid's strategy is aligned with AEMO's roadmap to build the critical infrastructure which will reshape the NEM and we will continue to drive innovation and efficiencies to enable greater sharing of energy between NSW, ACT, Victoria, Queensland, and South Australia.

An expanded and strengthened transmission backbone is essential to connecting geographically spread-out renewable generators and Renewable Energy Zones (REZs) and to supporting energy sharing between the states. This will enable cheaper, renewable electricity to flow to consumers, and more supply will help lower high wholesale energy prices.

The ISP outlines the new transmission that is required to deliver renewable energy to the NEM. These include committed and anticipated projects, like QNI Minor and VNI Minor, which Transgrid has completed, along with Project Energy Connect, which is currently under construction and HumeLink and VNI West which are in the planning stages.

A delay of even one year in delivering new transmission projects will result in higher bills for consumers.⁴ Regional interconnection supports diversity of generation fuel, technology and geography, and the sharing of energy and system services between states. This will build greater resilience in the system and help insulate consumers from market and system shocks. Transgrid's obligation as the NSW Jurisdictional Planner is to maintain a secure and reliable transmission system as the Australian power system transforms. The delivery of priority ISP projects is vital to ensure the power system can continue to operate stably and reliably as coal generators leave the system and as new renewables connect.

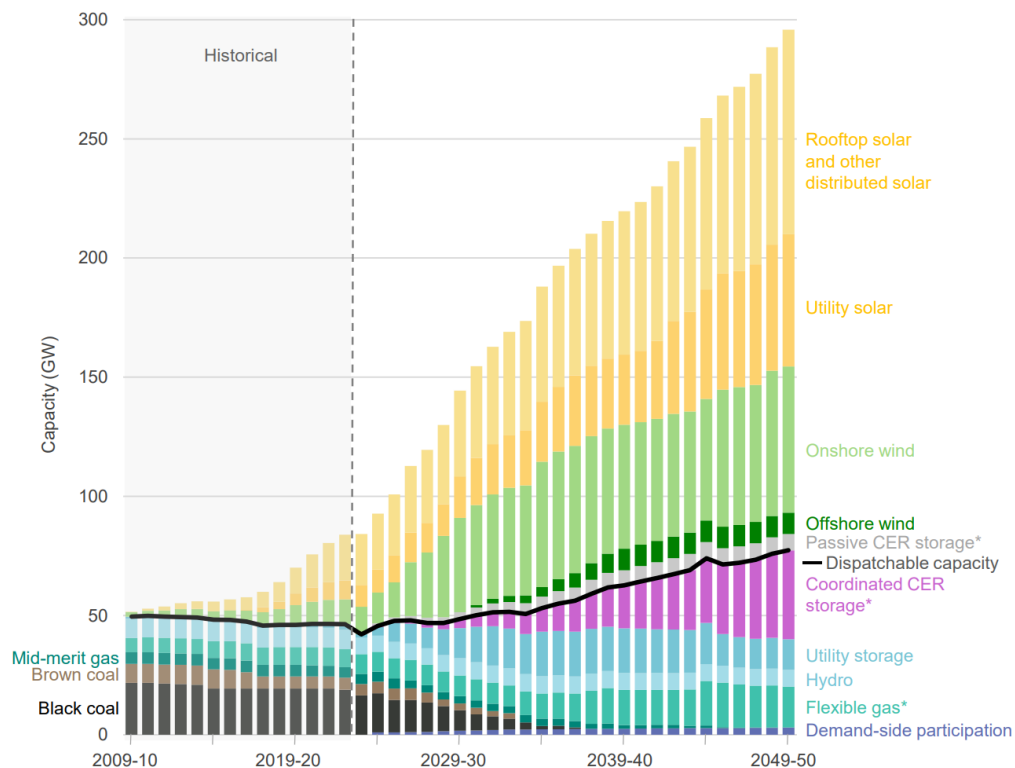
The role of electric vehicles in AEMO's Draft 2024 ISP

AEMO's Draft 2024 ISP identifies the need for various forms of storage to firm the variable renewable energy coming onto the grid. This includes a significant contribution from coordinated consumer energy resources (CER), in particular storage provided by both stationary storage devices and electric vehicle batteries discharging into the grid.

Coordinated CER storage is considered managed as part of a virtual power plant, while passive CER storage is not. AEMO forecasts, as shown in Figure 2 below, that the capacity of coordinated CER storage is forecast to rise from today's 0.2 GW to 3.7 GW in 2029-30, and then 37 GW in 2049-50 – by then making up 65% of the NEM's energy storage capacity.

Figure 2: AEMO Draft 2024 ISP storage capacity required across the NEM (GW, 2009-10 to 2049-50, Step Change scenario)

⁴ [Transmission line delays will increase energy bill cost - Energy Magazine](#)



Notes: Flexible gas includes gas-powered generation, and potential hydrogen and biomass capacity.
*CER storage are consumer energy resources such as batteries and electric vehicles.

Transgrid considers that electric vehicles, at an aggregated level, have the potential to be an important storage resource that can assist in managing the needs of a transitioning energy system by soaking up excess renewables and responding to renewable generation lulls to firm up supply. Ensuring the CER storage capacity, including coordinated EV vehicle to grid charging, can be efficiently managed on the grid will however require further policy and market reform to ensure this outcome plays out. If this capacity was not coordinated, there would be significantly higher risks related to maintaining power system security across the transmission network.

There is currently a lack of policy levers that ensures future electric vehicle charging will be managed in a coordinated manner. Transgrid recommends that Government work with industry and the NEM market bodies to ensure that the right market signals and regulatory changes are in place to deliver coordinated charging of the nation's vehicle fleet to efficiently integrate this load into the grid.

Government should consider setting targets for managed electric vehicle charging to ensure efficient integration and minimal impact on the grid. In addition, the energy market bodies should monitor the progress of the accelerating update of electric vehicles and efforts to coordinate charging loads in comparison to any national targets set. This would align with the new emissions reduction objective in the national electricity objective which requires the energy market to consider achievement of emissions reduction targets (and supporting emissions reduction targets like electric vehicle uptake targets) in decision making.

THE END