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Mr Chris Tallentire MLA
Chair
Legislative Assembly Education and Health Standing Committee
Level 1, 11 Harvest Terrace
WEST PERTH WA 6005
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Dear Mr Tallentire,

SUBMISSION TO INQUIRY INTO THE RESPONSE OF WESTERN AUSTRALIAN SCHOOLS TO CLIMATE CHANGE

Thank you for inviting Horizon Power to make a submission to the Legislative Assembly Education and Health Standing Committee's *'Inquiry into the response of Western Australian schools to climate change.'*

As you may be aware, as WA's regional energy provider, Horizon Power is committed to delivering sustainable and affordable energy solutions that harness the very latest in renewable technologies. By doing so, we can provide opportunities for customers such as our remote and regional Western Australian Schools to reduce their energy costs and decarbonise.

Horizon Power is Australia's only vertically integrated electricity utility, operating across the full energy supply chain: generation, transmission, distribution, and retail services. As such, the enterprise has an important role to play in delivering cleaner, greener energy and reducing reliance on diesel. Horizon Power has a strategic goal of having grid-based renewable energy in 100 per cent of our systems by 2030.

Horizon Power is supporting schools to respond to climate change by removing barriers which inhibit their ability to install solar and batteries. Through its partnership with the Department of Education (DoE) on the *Solar Schools Program*, it is currently installing and commissioning 2.1 MW of rooftop solar on 30 remote and regional schools, to collectively reduce the schools' greenhouse gas emissions by 2,100 tonnes.

I enclose Horizon Power's submission to the inquiry, outlining its partnership with DoE in helping remote and regional schools respond to climate change. The submission also highlights its leading role in the energy transformation, adopting innovative renewable energy technologies to enable regional schools, communities, and businesses to embrace a cleaner, greener future.

Yours sincerely,

Stephanie Unwin
CHIEF EXECUTIVE OFFICER

Encl. Horizon Power's submission

Horizon Power Submission

Legislative Assembly Education and Health Standing Committee

**Inquiry into the response of Western Australian schools to
climate change**

11 November 2021

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HORIZON
POWER

About Horizon Power

Horizon Power is Western Australia's regional and remote energy provider, powered by an engaged local workforce which is committed to delivering sustainable, innovative, and affordable energy solutions.

These solutions harness the latest renewable technologies, providing more choice to customers in the State's remote and regional communities over how and when they use electricity.

As a vertically integrated utility, Horizon Power operates across the full supply chain of generation, transmission, distribution, and retail services, providing electricity to more than 51,951 connections across regional Western Australia.

Horizon Power is responsible for the largest geographical catchment of any Australian energy provider, operating 38 systems within its service area, spanning 2.3 million square kilometres, delivering power to approximately 110,000 people and 9,000 businesses.

Horizon Power is a State Government owned Government Trading Enterprise (GTE) which operates under *the Electricity Corporations Act 2005 (WA)* and is governed by a Board of Directors accountable to the Minister for Energy.

Horizon Power recognises that Australia's energy future is reliant on the development and adoption of cleaner, greener sources to combat climate change. Western Australia has access to a range of renewable resources and Horizon Power is making significant investments in developing its renewable energy capability, incorporating rooftop solar and battery technology expertise.

The enterprise is undertaking technical trials and pilots which explore new and innovative ways of providing customers with more sustainable, affordable power and tailored energy solutions.

Corporate Strategy

Horizon Power's *Corporate Strategy 2019-2024* (the Strategy) guides the enterprise's commitment to support the communities in which it operates to live and work, grow and thrive.

Horizon Power's commitment to delivering energy solutions for regional growth and vibrant communities is underpinned by four overarching goals:

- Energy affordability,
- Renewable energy,
- People, safety, and wellbeing, and
- Sustainable business.

The desire for renewable energy options from customers is increasing, and the enterprise is leading the way with solutions that enable the delivery of significantly higher levels of renewable energy participation for remote and regional communities.

Horizon Power is working towards zero new diesel generation by 2025 and incorporating renewable energy sources into each of its 38 systems by 2030.

Solar Schools Program

Horizon Power has partnered with the Department of Education (DoE) to install and commission 2.1 MW of rooftop solar photovoltaics (PV) on 30 remote and regional public schools in the enterprise’s area of service (the Program).

Rooftop solar presents an opportunity for schools to maximise their daytime energy use and use their available rooftop space. The Program will reduce greenhouse gas emissions by 2,100 tonnes per year once completed.

Electricity is a significant portion of a school’s operating budget. The Program will reduce the DoE’s energy costs by 27 per cent, representing \$1.7 million in annual savings. Several of the schools will also benefit from solar energy storage provided by community batteries.

In late 2020, Scaddan Primary School, 50km north of Esperance, was the first of the schools to receive a rooftop solar system as part of the \$5 million Program, which is being funded by the State Government as part of the WA Recovery Plan.

By the end of December 2021, 27 of the 30 schools are expected to have had their systems installed and commissioned, with the remaining three scheduled for next year.

The size of each solar system is tailored to meet the needs of the individual school. Each participating school can access real-time data showing its past and present consumption, supporting staff and students to further reduce their electricity use and providing an authentic teaching resource.

Horizon Power is currently working with DoE to expand the Program to an additional 18 schools in the Kimberley and 10 schools in the Pilbara, with an announcement expected by the end of the year.

Building on this partnership, Horizon Power and DoE are also implementing *Bright Horizons*, a renewable energy technical education program. This is providing middle school students with practical training in renewable energy product development, with the goal of shaping future leaders in the energy sector and ultimately helping to build a new energy future for WA.

More information about the Solar Schools Program is available via renewtheregions.com.au/projects/solar-schools/ and Bright Horizons via horizonpower.com.au/BrightHorizons

List of schools involved in Solar Schools Program

<i>Kimberley</i>	<i>Pilbara</i>	<i>Gascoyne-Midwest</i>	<i>Goldfields Esperance</i>
<ul style="list-style-type: none"> • Derby District High • Halls Creek District High • Looma Remote Community • One Arm Point Remote Community • Wyndham District High 	<ul style="list-style-type: none"> • Baler Primary • Baynton West Primary • Cassia Primary • Hedland Senior High • Karratha Primary • Karratha Senior High • Millars Well Primary • Pegs Creek Primary • Port Hedland Primary • South Hedland Primary • Tambrey Primary 	<ul style="list-style-type: none"> • Meekatharra District High • Wiluna Remote Community 	<ul style="list-style-type: none"> • Cascade Primary • Castletown Primary • Condingup Primary • Esperance Primary • Esperance Senior High • Laverton School • Leonora District High • Munglinup Primary • Norseman District High • Nulsen Primary • Scaddan Primary

Supporting the decarbonisation of regional communities

Horizon Power has an important decarbonisation role to play in trailing new clean energy technologies for a wider benefit. The enterprise's early decarbonisation, ahead of other sectors, will support industry, government, including remote and regional schools, to decarbonise.

The enterprise aims to develop innovative network and customer energy solutions leveraging WA's competitive advantages as an emerging clean energy superpower, which do not require fossil fuels, and to incorporate renewable assets into each of Horizon Power's 38 systems.

Horizon Power is currently working toward a net zero carbon through both direct and indirect measures such as:

- Increasing its diverse portfolio of centralised renewable generation.
- Facilitating the transition to Distributed Energy Resources by undertaking infrastructure upgrades and pilot programs that remove barriers and empower customers to access renewables.
- Developing net zero transition pathways by exploring its portfolio of emissions to identify opportunities for decarbonisation in support of its 'cleaner, greener' guiding principle.

Challenges faced by regional and remote schools

Rooftop Solar PV

While the Solar Schools program is a helpful mitigation project, it is not an overall solution for the decarbonisation of schools. Rooftop solar PV typically only generates 20 to 30 per cent of the school's annual energy requirement. The project should be seen in the context of a suite of other measures both technical and product solutions. Central to schools' response to climate change is a cross government, department, entity and agency approach to avoid the adoption of one solution having detrimental impacts in other areas.

The installation of rooftop solar on schools in Horizon Power's service area is only possible where a micro-grid hosting capacity is available. The installation of rooftop solar on all schools could lead to significant grid stability issues with fluctuations in solar output feeding back into the grid. The installation of rooftop solar, where hosting capacity is exhausted, is still possible with renewable energy smoothing and feed-in managed technologies which enable rooftop PV to be actively smoothed and curtailed as required.

Given the significant penetration of rooftop solar in the South West Interconnected System (SWIS), the installation of rooftop solar on many schools in the SWIS would lead to similar grid stability impacts as those Horizon Power experiences in its micro-grids. However, complicating this situation is the absence of mandated feed-in management technologies in the SWIS to orchestrate this excess solar feeding back into the grid at scale.

Hosting Capacity

Horizon Power supports the installation of rooftop solar in schools, however due to technical microgrid constraints the enterprise sets a limit on the number of customers able to connect rooftop solar to safeguard the quality of electricity supply within each community.

Each microgrid has a hosting capacity for rooftop solar and other Distributed Energy Resources (DER) which can be safely accommodated, beyond which the grid can be destabilised leading to supply disruptions to customers.

Horizon Power encourages the uptake of rooftop solar by schools, households and businesses within its service areas and has a plan for zero refusals when connecting solar by 2025. To achieve this, the enterprise is leading the way with technical studies, trials, pilots, product development and investment modelling. The long-term goal is to ease hosting capacity constraints allowing more customers to safely connect DER without compromising a microgrids system reliability.

Some leading projects are outlined below:

- In Denham, Horizon Power commenced construction on a ground-breaking *Hydrogen Demonstration Project* in May 2021 to investigate whether hydrogen could become a significant player in the WA energy market through developing the technical ability, integration processes and progress toward a 100 per cent renewable energy system.
- *The Onslow Renewable Energy Project* includes the development and roll-out of a Distributed Energy Resource Management System (DERMS), an emerging energy management technology. A complex and technically challenging piece of work, and a first that DERMS has been deployed for this purpose in Australia. In an Australian-first, Horizon Power successfully powered the town of Onslow on 100 per cent renewable energy for 80 minutes in June 2021, using a combination of utility solar and batteries and customer rooftop solar.

Cost

High upfront costs in installing rooftop solar PV, limit the number of schools able to participate in renewables. Technical and engineering complexities add to the installation and commissioning expenses.

Renewable energy solutions for schools

Horizon Power is accelerating its capability in providing professional energy services to customers. Successful delivery of the program places Horizon Power in a strong position to provide renewable energy solutions for both public and private remote and regional schools to meet emission reduction targets and save on energy costs. Several solutions include:

Standalone Power and Battery Energy Storage Systems

The facilitation of next generation solar and battery technology to generate and store electricity without the need to be connected to the overhead electricity network. Thereby providing safe and reliable power utilising renewable energy solutions.

Community Solar

Community Solar is a subscription-based retail product that allows participating customers to virtually access renewable energy from Horizon Power's solar farm. Unlike rooftop solar, Community Solar avoids the need for customers to outlay upfront capital whilst still delivering a 10 per cent energy bill saving.

Community Batteries

Community Batteries enable customers to virtually store their excess renewable energy for use in the evening peak period. This addresses both minimum system load issues during the day and avoids curtailment of customers' solar, while also reducing network peak in the evening.

Solar Smoothing Services

Solar Smoothing is delivered via community batteries and is a subscription-based retail product that ensures a customer's solar system greater than 30 kW complies with the Horizon Power connection requirements for renewable energy smoothing and avoids the need for on-site behind the meter smoothing batteries.

Load Smart

Load Smart is a demand response product that rewards customers for shifting, reducing, or increasing their usage at certain times, allowing Horizon Power to decrease network peak, increase renewable energy utilisation during the day, and avoid/defer network augmentation.

END