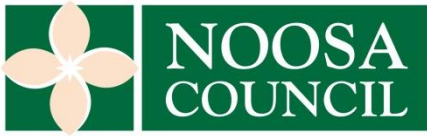


Climate Change Response Plan Community Reference group Recommendations

Project Title	The Noosa Community Battery Project	
This project addresses (click all that apply)		
Emission reduction <input checked="" type="checkbox"/>		
Climate adaptation <input type="checkbox"/>		
Both <input type="checkbox"/>		
Type of project		
Capital works <input checked="" type="checkbox"/>		
Advocacy <input type="checkbox"/>		
Education <input type="checkbox"/>		
Policy <input type="checkbox"/> Other - Proof of concept demonstration		
This project addresses the following themes of the Climate Change Response Plan (Click all that apply)		
Strong leadership & governance <input checked="" type="checkbox"/>	Energy efficiency & renewable energy <input checked="" type="checkbox"/>	
Clean low emissions industries <input type="checkbox"/>	Sustainable transport <input type="checkbox"/>	
Healthy and resilient natural systems and carbon drawdown <input type="checkbox"/>	Sustainable agriculture and food systems <input type="checkbox"/>	
Resilient and adaptive communities and built environments <input type="checkbox"/>	Zero waste and circular economy <input type="checkbox"/>	
List the strategic priorities of each theme that this project aligns to:		



Climate Change Response Plan Community Reference group Recommendations

Theme 1: Strong leadership and governance

- 1.1 Advocate to levels of government and mobilise the community to drive decisive climate emergency action
- 1.2 Strengthen partnerships with governments and stakeholders to take urgent action to achieve a low carbon economy and resilient community
- 1.3 Move council from business-as-usual operations to adopting deep, systemic change and being a powerful influencer and example of climate action.

Theme 2: Energy efficiency and renewable energy

- 2.1 Transition Noosa Council and Noosa Shire to 100% renewable energy and ensure the transition is inclusive of low income and vulnerable residents and businesses, including strata tenants
- 2.3 Develop a climate aware and empowered community for reducing climate risks and emissions

Does the project contribute to meeting the targets set out in the CCRP and/or the Environment Strategy 2019?

Yes

No

Other (please specify)

Has the project already been identified in the CCRP, or is it a new initiative?

Yes Item 2.1. *Renewable energy investigation (community focused) - Assess opportunities and financial models within and outside the shire for community owned renewable energy projects, such as solar farms, micro grids and solar gardens.* • *Local renewable energy projects commenced Ongoing*
• *Zero emissions pathways study (community focused) -*

No

New initiative

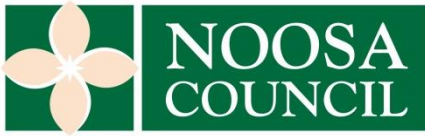
Project description: This project proposes the installation of a pilot community battery in the Noosa Shire in 22/23. The project would be comprised of the following elements:

Climate Change Response Plan Community Reference group Recommendations

- 1) Need for the project. A minimum of a doubling of current rooftop solar capacity in Noosa is required to meet its goal of zero emissions by 2026. However, there are now well-recognised grid stability problems associated with the growth of rooftop solar, including frequency and voltage instability, and limitations on hosting capacity.

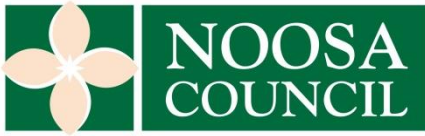
At the macro level, Glen Dahlenberg from Energy Queensland has advised that it is estimated that a minimum of 8GWh of storage is required in Queensland by 2030 to maintain security of supply, and up to 16 GWh to maximize the energy delivered by rooftop and large scale solar. Battery storage at various scales is recognized as one of the important tools by which to maximize rooftop solar and address network difficulties. Ultimately a network of community batteries will be required in Noosa to act as a “solar sponge” to soak up excess solar production during the day and use at night.

- 2) Oversighting of the project delivery would be via a consortium consisting of ZEN, Noosa Council, Energex, the University of the Sunshine Coast and other potential commercial partners such as Veolia, Planet Ark Power or others. A strong collaboration would be established with Yarra Energy Foundation, which is significantly advanced with its own community battery pilot.
- 3) Location of the battery would be determined via a Feasibility Study to be finalized prior to 30 June 2022. Discussions are currently underway between ZEN, YEF, Noosa Council, Energex and the University of the Sunshine Coast to implement the feasibility study. Much of the intellectual property currently being developed by YEF is open source, thus facilitating the reliability of the feasibility study methodology and findings. It is also expected that the avoided capital infrastructure costs would be of significant interest to Energex. The feasibility study would include estimated return on investment from revenue streams including arbitrage opportunities whereby energy is bought at low costs during the day and sold at higher costs at night time to meet demand.
- 4) Based on tender costs from the recent YEF battery project (\$1000 per kWh), estimated costs for the project would include approximately \$250 000 for a 250 kWh battery, together with project consultant fees of approximately \$100 000. It is proposed that Noosa Council fund one-quarter of these costs, and remaining funds be sought from external sources including the Australian Renewable Energy Fund (ARENA), grants and potential commercial partners.
- 5) The YEF commercial model envisages a network of community batteries, with operational infrastructure from the initial battery obviating the need for extensive additional investigative, infrastructure and operational costs. Similarly, it is envisaged that learnings from the Noosa pilot project would then inform the location and financing for a network of community batteries throughout the Shire, based on assessed demand and location opportunity.



Climate Change Response Plan Community Reference group Recommendations

Estimated resources required (approximate)	
Financial costs	\$350 000 (total)
Human resources	One experienced consultant to oversight the project
Other	External funding to be sought for ¾ of the project costs.
Benefits of the project	
Describe the expected benefits of the project (e.g reduction in kWh, litres of fuel, tonnes CO ₂ e saved/sequestered, improved community resilience, preparedness, clean industry attraction, etc.).	
<p>A significant ARENA study concluded that community batteries can deliver social, technical and economic benefits. Further, that “Stakeholders agree that more public trials are needed to demonstrate the operational delivery of benefits.(p. 2) Benefits include:</p> <ol style="list-style-type: none"> 1) <u>Increased distributed energy capacity.</u> The ARENA study concluded: “Community-scale batteries have the potential to play an integral role in Australia’s transition to a decentralised grid...Community-scale batteries can increase the amount of DER that can be integrated into the distribution grid.” 2) <u>Technical Benefits:</u> The ARENA study concluded (P. 5): “With the integration of distributed energy resources, we are facing both increasing peak load and increasingly unpredictable peak load, as well as increasing peak exports from household solar photovoltaic (PV) generation. Together, these challenges could cause demand and voltage management issues on the distribution network. Our analysis revealed that community-scale batteries should be explored as a viable solution to addressing these challenges. Technical benefits of this scale of storage arise from a higher level of reliable control associated with managing a larger asset, compared to the management of many household batteries, and in providing regulation and contingency services such as voltage management and backup islanded power supply. 3) <u>Economic Benefits.</u> The ARENA report noted (p. 5): Economic benefits from community-scale batteries arise from the efficiencies of flexibly sharing the power and energy capacity of the battery among customers as well as reducing the number of system communication and control components. .. A recent report showed that community-scale batteries are cheaper than household batteries, regardless of ownership (network, retailer or community group)”. 4) <u>Avoided Emissions:</u> The ARENA report noted (p. 5): Another bundle of benefits surround the potential of the battery to reduce carbon emissions through enabling more renewable generation for both electricity consumption and electrical vehicle charging. “ 5) <u>Noosa emissions avoided:</u> 	



Climate Change Response Plan Community Reference group Recommendations

ZEN undertook a desktop analysis of potential Noosa storage requirements and emissions avoided, based on the 2030 scenarios identified by Glen Dahlenberg cited previously. We have estimated that 67.6 MWh of storage would be required to keep the grid stable and 135.1 MWh to soak up excess generation. Based on these figures, we have then estimated that annual non-renewable of 21.0 GWh (or 16,833 tonnes of CO₂-e) could be averted with the 67.6 MWh of storage, and annual 42.1 GWh (or 33,665 tonnes of CO₂-e) of non-renewable production with the 135.1 MWh storage.

Stakeholders involved/impacted/benefitted by the project

With both Noosa Council and ZEN having the goal of net zero emissions by 2026, there is a need to more than double current rooftop solar output to meet this goal, with predictable emerging grid stability issues. The development of a network of community batteries will enable this growth of rooftop solar while at the same time showing leadership to the local and broader community in innovative ways to avoid grid stability problems. The business model that YEF is trialling is designed to maximise the community benefits and allow for community investment in the local batteries.

Potential partners in the project

Key headline partners in the proposed consortium would be ZEN, Noosa Council, Energex, University of the Sunshine Coast, together with potential commercial partners which could include Veolia, Planet Ark Power or similar.

Equally as important, it is envisaged that the roll-out of the battery network should involve key community and business association partners. We are aware, for example, that Cooran Earth Rights already has a significant interest in the project, as does Pomona Chamber of Commerce. It is also likely that businesses in Noosa Junction and the Noosaville industrial estate would have an interest in being involved.