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# Monash Energy Transformation, a pathway to a 100% renewable powered Microgrid

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*Abstract:*

Monash University has embarked on an ambitious journey towards 100% renewable powered Australian campuses and net zero emissions for the University's built environment.

Based on Climateworks Australia pathways to deep decarbonisation, Monash will achieve net zero emissions through energy efficiency measures, campus electrification, deployment of on-site renewable energy, and Power Purchase Agreements for off-site renewable energy generation. To ensure a smart, cost-effective and reliable transition to 100% renewable power, Monash University is developing and implementing a Microgrid on its Clayton campus, which will effectively manage energy demand and response on a network with high penetration of DERs. This smart embedded network connected to the Victorian grid will act as a 'living laboratory', driving innovation and industry led research, and provide solutions for the transformation of energy networks.

To support a real market model, Monash is investigating a decentralised, cloud-based and supplier agnostic Microgrid control philosophy that will aim to demonstrate a model for scalable growth of Microgrids, applicable to both new developments and brownfield sites. Rather than attracting a single large industrial equipment manufacturer, our project seeks to demonstrate solutions that unlock opportunities for scalable Microgrids with agile local participants and providers.

Emphasis will be placed on the development of a market driven platform where both energy and power quality are managed and orchestrated in a way that allows fair access and appropriate cost incentives to customers. We are particularly interested in how we can use layered intelligence, distributed optimisation and next generation communication systems to achieve increased reliability and high penetration of DER, at a fraction of the cost of more typically hardwired centralised systems. This will make Microgrids replicable in non-campus applications and provide solutions to current regulatory, policy and business model challenges to wider application of grid-tied Microgrids.

Through the Energy Transformation program, Monash University will provide a real-world example showcasing how Australia can keep its energy system affordable and resilient, in particular during peak periods and extreme weather events, while rapidly transitioning to a low carbon economy.

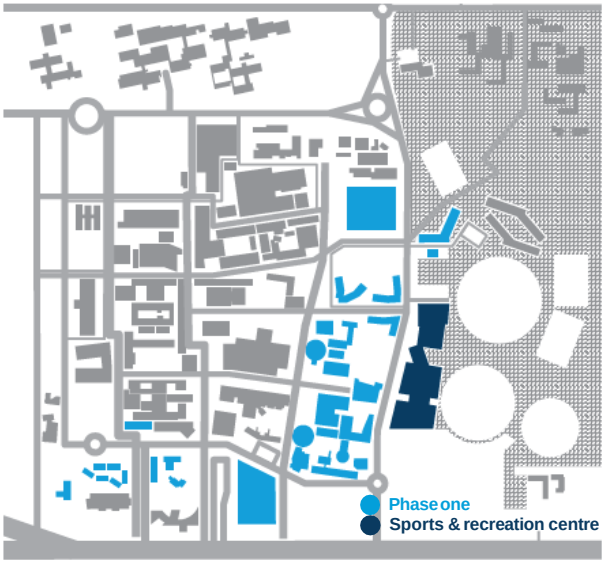


*Figure 1: Monash Clayton Campus, Phase one.*