

# Microgrid Project Case Study

Monash University  
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## Net Zero on Campus Community Case Study

The [Net Zero on Campus](#) initiative, a collaborative effort between SDSN, the Climateworks Centre, and Monash University, aims to facilitate the sharing of lessons and resources to accelerate the decarbonization of university campuses around the world. The initiative consists of a “how-to” guide and accompanying online toolkit that will enable universities to accelerate the planning and implementation of net zero strategies, and act as living laboratories for testing solutions.



### What is the case study trying to accomplish?

Monash University is committed to reach net zero by 2030. To achieve this, we will be sourcing 100% of our electricity from renewable sources and will eliminate our dependence on coal-fired energy sources.

The Monash microgrid will be a versatile platform to receive and store energy from various renewable energy sources. It will incorporate 20 buildings across the Clayton campus comprising 3.5 MW of demand, 1 MW of Solar photovoltaics, 1 MWh of battery storage, and 2 EV charging stations. We'll be able to control when and how we use our energy, which means we can reduce demand and strain on the network during peak times. It will also help stabilise the wider grid, making it more resilient. This will benefit the broader community, especially during extreme weather events. In partnership with global tech company Indra, Monash is developing a precinct scale microgrid

#### University Information

**City:** Melbourne

**Country:** Australia

**Region:** Oceania

**Number of Staff:** Very large (greater than 10,000 staff)

**Number of Students:** Large (between 30,000 to 60,000 students)

**Type of Institute:** Public

#### Case Study Overview

**Category:** Energy

**Initiative:** Establish campus microgrid

**Type of Net Zero Solution:** Physical intervention

**Funding Source:** Government funding, Australian Renewable Energy Agency (ARENA)

**Emissions Scope:** Scope 2

**Impact on Net Zero:** Very large positive impact

**Scale:** \$1 million to \$10 million (supported \$2.9 million grant through ARENA's Advancing Renewables Program. Microgrid can provide \$22 to \$36 million in gross economic value for Victoria)

**Timeframe:** Very long (greater than 5 years)

**Stakeholders:** Government, Sustainability Office

**Transformational Potential:** Very Significant

platform as part of the Australian Renewable Energy Agency (ARENA) funded Smart Energy City project. This process is designed to support policy makers, regulators and industry (including organisations interested in establishing their own microgrids) in the accelerated uptake and effective implementation of microgrids.

## **What were the key success factors in implementing the case study?**

The Smart Energy City project provides a platform for research into technological, business and customer behavioural features of the deployment and optimisation of distributed energy resources (DERs). Over the course of 2019-2020, Monash and Indra will work with industry, government and consumers through a series of engagement events and roundtables to share insights from the Smart Energy City project and ensure it provides value to relevant stakeholders.

Three framework layers (DER Integration, Active Grid Management and Smart Energy Management) drive the design and deployment of Smart Energy Platforms that are aligned to a microgrid's capabilities and objectives. The layers represent both incremental phases of platform deployment and the system layers of the deployed platform.

## **What were the challenges or barriers you had to overcome in implementing your initiative?**

The Smart Energy City project will also explore broader behavioural, economic and engineering issues that impact the entire electricity network. Stakeholders have identified a range of areas which they are seeking further information on, including:

- The role of flexibility, efficiency and electrification in developing 100% renewable powered precincts;
- Measures to influence customer behaviour and customer response;
- Regulatory and governance requirements for development of microgrid control systems;
- Requirements for demand response and network service markets;
- Key areas for further research and development.

## **What did you learn from the process and what are your recommendations to others?**

The Smart Energy City project will see the design, deployment and operation of a microgrid at Monash's Clayton campus. This will allow for real world challenges to be unearthed, and learnings shared so that the industry can refine this approach and hence reduce costs. There are a number of areas related to the practical operation of the microgrid which stakeholders are interested to better understand:

- Microgrid design framework;
- Minimal infrastructure requirements for microgrid operation;
- Partnerships required for microgrid operation;
- Maximising available building flexibility for both retrofits and new builds;
- Safety and cybersecurity considerations;
- Stakeholder engagement practices;
- Monitoring and evaluation parameters to assess microgrid performance under different conditions.

### What resources did you use to implement this initiative?

Resource	Why is this resource helpful?
<a href="#">Smart Energy City Introduction</a>	Details of the Monash microgrid project.
<a href="#">Victorian Market Assessment</a>	Details of the Monash microgrid project.
<a href="#">Monash Microgrid Website</a>	Includes a toolbox for other universities to use the developed tools in creating their own smart energy campus.

## Get Involved with Net Zero on Campus

### Contribute to the Online Toolkit

- [Submit](#) your own case studies and decarbonization resources to be featured;
- Share your questions and/or feedback with us at [info@unsdsn.org](mailto:info@unsdsn.org).

### Join Our Community

- Join our global community of practice and Net Zero on Campus LinkedIn Group;
- Join global networks of academic institutions working on decarbonization: [SDSN](#), [Second Nature](#), and [EAUC](#). See our resource directory for more networks;
- Join the [Race to Zero for Universities and Colleges](#) campaign and make a net zero commitment;
- Empower your students and engage them in your campus decarbonization efforts: join [SDSN Youth](#) and see our guide for more information.

### Learn More

- Explore [SDSN's free, open educational resources](#) from the world's leading sustainable development experts to use in your classrooms: MOOCs, educational videos and lectures, and global community of practice.

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[Net Zero on Campus](#) is a collaboration between [SDSN](#), [the Climateworks Centre](#), and [Monash University](#), in partnership with [Second Nature](#) and the [EAUC](#) (Secretariat of the Race to Zero for Universities and Colleges).