University of
South Australia

How do we create a net zero carbon UniSA?

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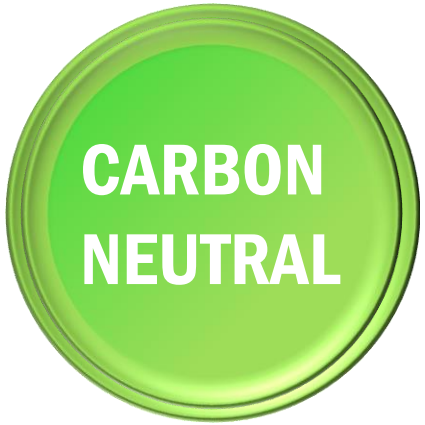
Policy Context

- Carbon Neutral Adelaide policy target
- Energy security in South Australia a major issue
- Cost of energy to UniSA increasing quickly
- International movement towards carbon neutral campuses
- Charles Sturt becomes first Australian carbon neutral university
- UNIJAM 2016 flagged interest for lower carbon UniSA

Carbon Neutral Universities Network



Many universities are on their transition to zero carbon, some examples:

- **University of Warwick** created a 'Sustainability Champion' position
  - Helps schools, students, FMU, & senior management deliver change
- **Edinburgh University** created £2.75m/pa 'Sustainability Campus Fund'
  - Funding direct to schools and students to implement local solutions
- **London University** staff and students own the campus PV system
  - Sell electricity to the university under a power purchase agreement
- **Manchester Metropolitan University** generates its own low carbon electricity and water supply
  - Completely refocused university to be leader of practical low carbon solutions

Research *Testbed* for low carbon action

Carbon neutral *testbed* at Mawson Lakes could re-position UniSA

- Showcase local and international solutions
- Build long term industry partnerships
- Attract new research grants
- Provide ‘hands on’ experience to students
- Enhance reputation as *‘University of Enterprise’*

Solar PV

System optimisation software tools, future ARENA funding

Campus load and energy spot price forecasting

Thermal Storage

Electrical Storage

Long term research and development

- Energy Efficiency
- Waste to Energy
- Building Design
- Heat Recovery
- Electric Vehicles
- Water Management
- Waste Recovery
- Refrigeration
- Control Systems

Mawson Lakes Six Point Plan

1. **Immediate supply side program**
   Capital investment to install photovoltaic panels on building rooftops
2. **Define best technology pathway to carbon neutrality**
   Detailed and fully costed pathway to achieve a net carbon neutral balance
3. **Demand side program**
   An accelerated investment in advanced technologies to reduce energy demand
4. **Load management program**
   Capital investment to install thermal and electrical (battery) storage
5. **Additional supply program**
   Capital investment in solar tracking and heat recovery technology
6. **Offset gap analysis**
   Identify the quantity and cost of carbon credits to claim a net zero carbon balance

Industry Partnerships

Solar PV

- Testing built environment applications for PV systems
- Expanding PV usage to transport and industrial applications

Tracking

- Creating an R&D centre for single and double axis tracking systems
- Improving industrial design, ease of installation, pre-fabrication

Thermal Storage

- District heating and cooling systems
- Large scale demonstration of thermal storage to reduce peak demand

Battery Storage

- R&D centre for precinct and grid scale electrical storage
- Predictive optimisation systems to maximise storage utilisation

Waste to Energy

- Demonstration of high temperature incineration technology
- Demonstration of waste heat recovery systems

Appliances & Equipment

- Super efficient refrigeration
- Energy management controls

Building Systems

- Low carbon building design
- Pre-fabrication & integration of solar technologies