



# Assessing the Impact of Urban Development and Solar PV on Urban Heat Islands



## Need for this Research

While energy consumption and greenhouse gas emissions contribute to global warming and climate change, extreme climate conditions affect energy demand such as increased energy use for cooling cities.

Solar photovoltaic (PV) is one type of renewable energy technology that helps reduce greenhouse gas emissions. However, it potentially contributes to urban heat island effects. Waste heat from air conditioning (A/C) units is also a matter of concern but there is a poor understanding of the significance of its impact on urban heat islands particularly in relation to different urban typologies.

Therefore, there is a strong need to understand interrelated attributes between urban development features, solar photovoltaic (PV) options, A/C units, and mitigation and adaptation strategies, as well as develop a holistic way to assess their impact to inform government policy and development assessment.

## Research Questions

To support this need, this project seeks to answer the following research questions:

- To what extent do urban form, public realm, and mitigation technologies help reduce urban heat island effects and peak electricity demand?
- How does the solar photovoltaic (PV) affect urban heat island effects (UHI)?
- How does waste heat from air conditioning (A/C) units affect urban heat island effects (UHI)?
- What are the recommendations to achieve energy efficient and resilient suburbs?

## Expected Outcomes

This project will integrate the findings into the CRC for Low Carbon Living's UHI Mitigation Decision-Support Tool to enable and support informed development assessment across different urban contexts.

## What Excites Us

Expected outcomes will inform public and private sectors of the impact of urban development and intervention strategies on urban heat islands, and provide guidance on improving energy efficiency and resilience against urban overheating.



**LOW CARBON LIVING  
CRC**

Coordinated by the CRC for Low Carbon Living, the NSW Energy Efficiency Decision Making Node is part of the Energy Efficiency Research Hub. The Node is a research collaboration between CSIRO and the Universities of Wollongong and UNSW. With a track record of high-quality, rigorous and end-user driven research, it is delivering research outcomes to help reduce greenhouse gases and improve energy efficiency. Key research areas are:

- Energy efficiency investment decisions
- Efficient products, technologies and services
- Practical and achievable energy-saving actions



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## FURTHER INFORMATION

For more information about this project, please contact:

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