SOLAR APARTMENTS

NP4011

How can the 2.2 million Australians who live in apartments share the benefits of solar energy?

Research Questions

RQ1 How big is the opportunity for solar photovoltaics (PV) apartment buildings?

RQ2 What is the value for households, electricity distribution networks, society and the environment?

RQ3 How can different technical and financial arrangements ensure equitable distribution of costs, risks and benefits?

RQ4 What regulatory changes are needed to make this happen?

Methodology

The project will address:

RQ1 using **3D building models** and aerial images of urban centres;

RQ2 through **technical and economic modelling** of solar generation to supply apartments and common property electricity loads in real apartment buildings;

RQ3 by modelling the distribution of **costs and benefits** under a range of **technical and financial** arrangements, and through **case studies** to better understand risks;

RQ4 via **case studies** and stakeholder **interviews** and analysis of potential r**egulatory arrangements**.

To address the lack of public information regarding apartment energy use, load data will be collected for each apartment in a range of buildings at 15 minute intervals for a year.

		Distribution		
		Behind the Meter	**Embedded Network**	**Local Distribution Network**
Demand Met	**Apartments**	Individual Systems for individual loads		
	Common Property	Shared PV for shared loads		
	Whole Building	Shared PV distributed behind the meter	Shared PV distributed via Embedded Network	Shared or individual PV distributed via Local Energy Trading

Table 1: Technical Implementation Arrangements

Results

Preliminary highlights:

1 Highly diverse building stock and load profiles with variable rooftop opportunity due to shading and rooftop obstructions.

Figure 1: Rooftop opportunity assessment

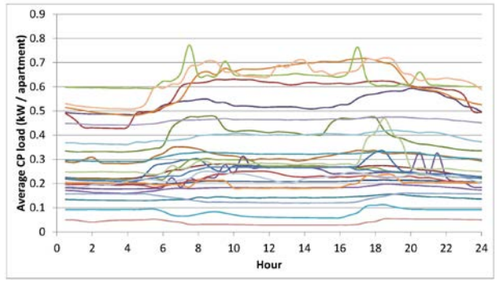

Figure 2: Diversity of common property loads

2 For high-rise buildings, potential rooftop generation is likely to be consumed by common property loads. For low-rise, rooftop generation could make a significant contribution to whole building loads.

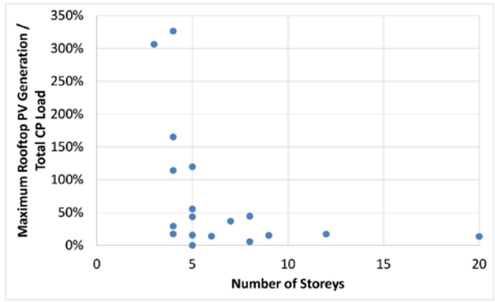

Figure 3: Ratio of potential generation to common property load

3 The diversity of load profiles within buildings suggests opportunities for load aggregation and shared generation.

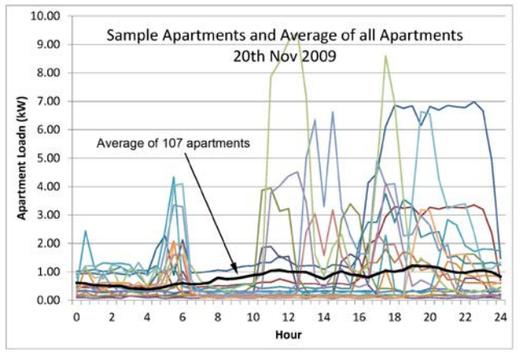

Figure4: Diversity of apartment loads within a building

4 Significant barriers to be addressed include split incentives, tariff structures and rates, tax rules, energy retail law and embedded network regulation.

Apartment residents should not be left behind in the transition to a distributed renewable energy system.

Anticipated impacts

This research will provide a body of evidence to support policy development to enable wider deployment of renewable energy on apartment buildings. Outcomes and recommendations will be shared widely with project partners as a basis for advocacy and to provide guidance and information to consumers.

Project Partners:

3-Council Regional Environmental Program, City Of Stonnington, Huxham Energy Consulting, Lendlease, Moonee Valley Council, Moreland Energy Foundation, Strata Communities Australia, Willoughby Council, Yarra Energy Foundation

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