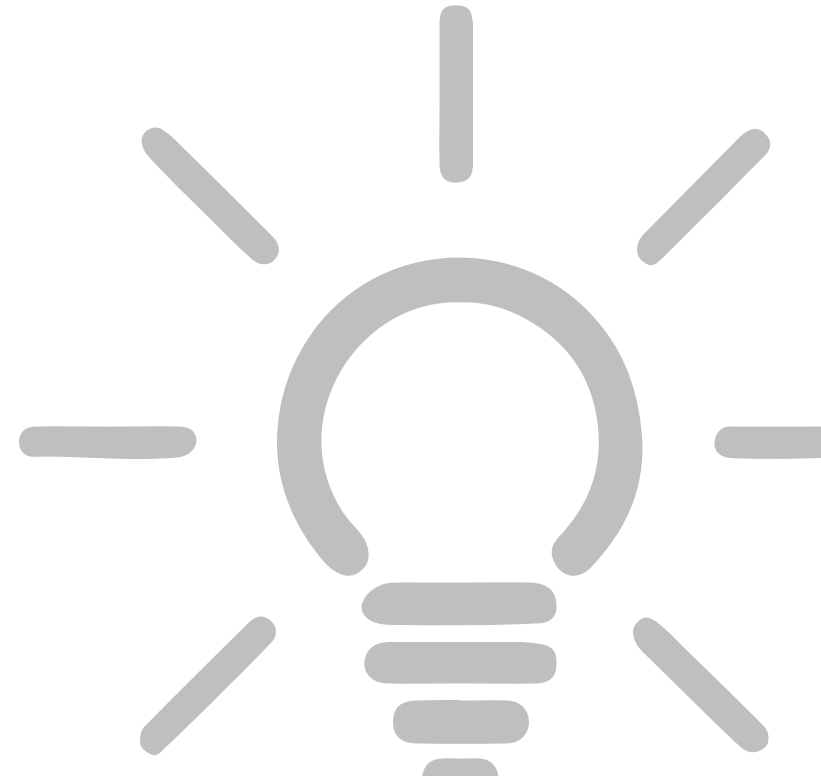


Electrification of Apartment Buildings

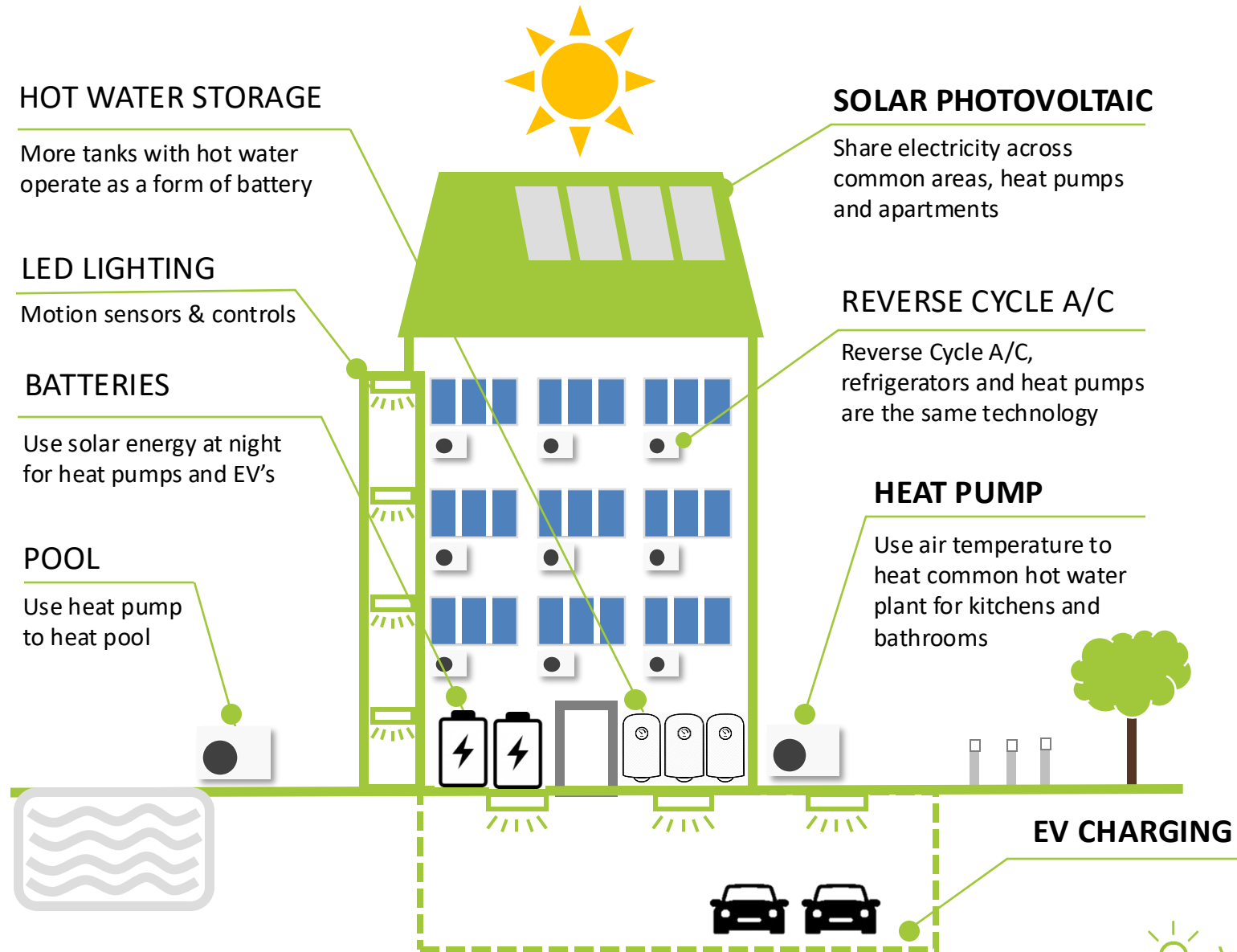
EV Charging backbone installed at 22 Corrimal St Wollongong

Contents

1. Electrification of strata buildings
2. Solar for Apartment Buildings
3. Heat Pumps for Hot Water
4. EV Charging for Apartment Buildings
5. NSW Strata Law changes for Sustainability



Completing the electrification of strata buildings



Meterboards need to upgrade

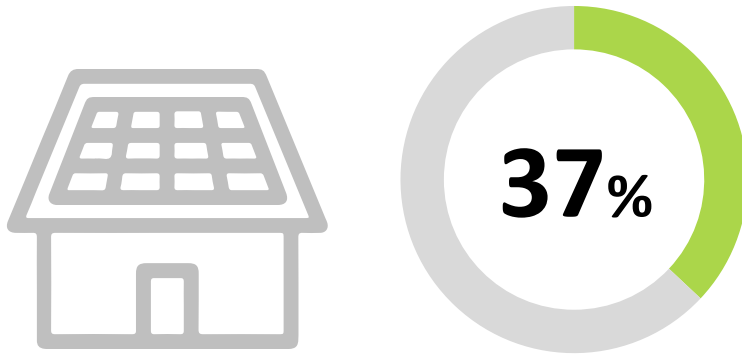


Before

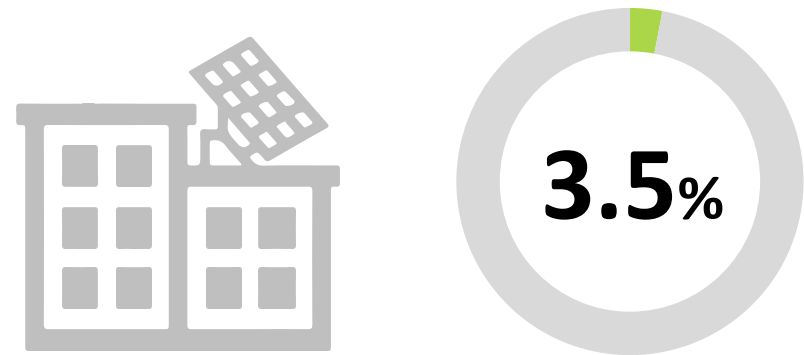


After

Residential Houses with Solar



Residential Strata Schemes with Solar



Postcode 2515 has over 16% penetration of solar on strata but this is driven by a large number of duplexes which are technically strata, but much easier to get approval to install solar on.

Solar for an individual apartment



Solar Sharing Gateways (Allume Energy Solshare or Zeco Marshall)



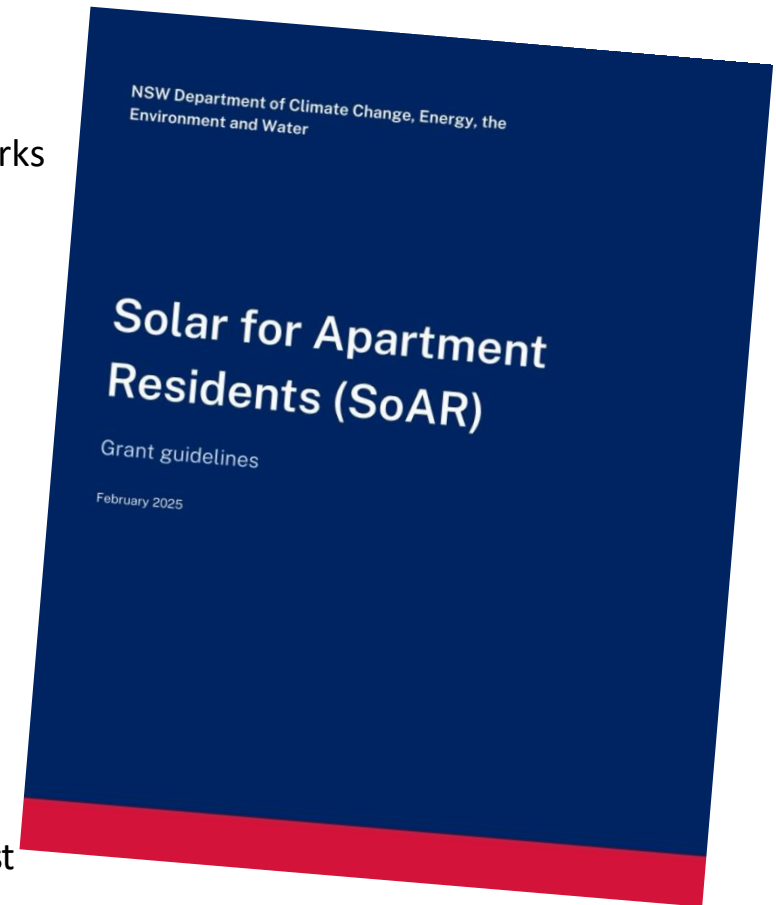
Example of an apartment building with two inverters and two solar sharing gateways from Allume Energy for 17 apartments. Each Allume Energy solar sharing gateway has maximum of 15 apartment connections so 2 x "Solshare's" are required at this site.



25kW solar system sharing into apartments.

NSW Solar for Apartment Residents (SoAR) Grant - \$25m limited offer

- 50% co-funding capped at \$150,000 per apartment block
- Minimum of 3 lots and no more than 55 lots
- Applies to individual solar systems, shared solar or embedded networks
- Stratas mustn't have had solar installed in the last 10 years
- Payback needs to be under 10 years
- Common area meter can be connected to solar sharing but can't consume over 40% of total solar generated
- Balance needs to be paid for by ALL owners on unit entitlements
- Not able to use power purchase agreement (PPA) solar finance
- Waterproofing under the solar system can be included
- Essential meterboard upgrades can be included
- Only for strata buildings, not for company title
- Not more than 30% of the solar generated can feed into the grid
- Doesn't apply to batteries but you can apply for NSW Peak Demand Reduction Scheme for batteries which you want to incorporate
- Requires 2 quotations from solar installers
- Installs must be completed by March 2026 for successful applicants
- Any owner can register an expression of interest but will need the last annual financial statement and the strata insurance policy



Common area solar on 27 Flinders St Wollongong



Cost and Payback

The average **cost per watt** of solar installed on a sample of Australia wide strata buildings after taking off the small-scale technology certificate rebate and including lifting costs is **\$1.40 inc GST per watt**.

The solar panels themselves have dropped by a factor of 5 over 10 years, making the labour costs involved in installing a larger proportion of the overall installed system cost in 2025.

Building Type	Average Cost Per Watt Solar Install Estimate (after STC rebate inc GST)
Low Rise - 1 to 3 Levels	\$1.23
Medium Rise – 4 to 8 Levels	\$1.28
High Rise – 9 Levels and above	\$1.42

Payback for solar systems on strata schemes is typically between 7 years to 11 years.

Different brands of batteries are now being installed in strata



Sungrow



Alpha ESS



Tesla



Energizer

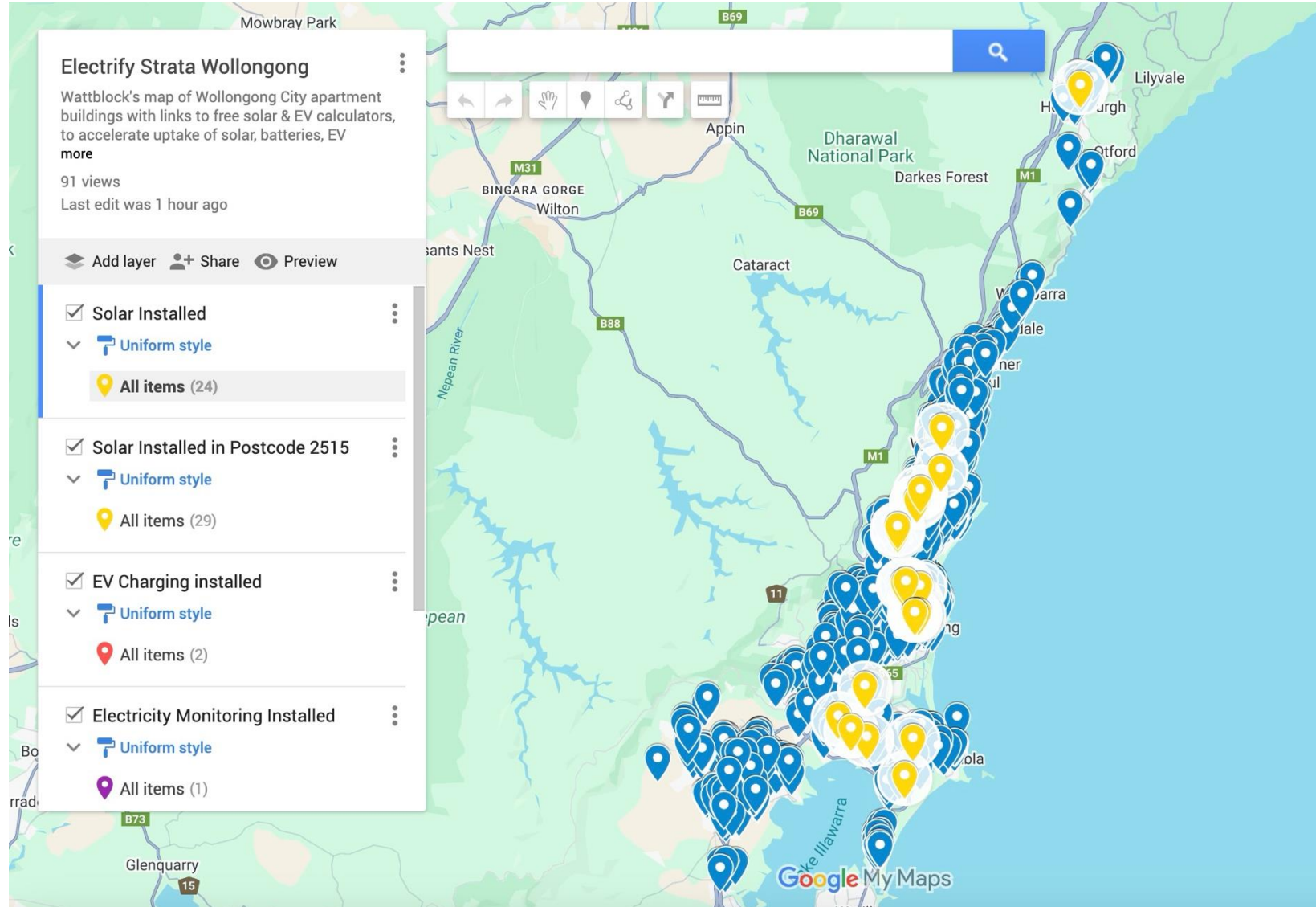


BYD

24 x Tesla Powerwall Batteries for one strata precinct



Yellow pins are strata buildings with solar in Wollongong





Heat pumps

Why put heat pumps in apartment buildings?

“three parts free energy from the air, one part electricity. Every piece of energy you use which is already onsite is one piece of energy you don’t have to buy”



Less energy, use
ambient air
temperature



Lower bills, avoid gas
distribution
'monopoly'



Reduced fossil fuel
reliance



Reduced CO₂
emissions

Hot Water '101' for Strata Buildings

Water takes 4.18 joules of energy to heat 1 gram of water by 1 degree. Joules are such a tiny measurement that gas is measured in Megajoules (MJ) or millions of joules.

Gas bills are measured in MJ and Hot water bills are measured in litres (L)

Type of Apartment	Daily Hot Water Consumption
2 Bedroom 2 Bathroom	75 litres per day
3 Bedroom 2 Bathroom	90 litres per day

Common gas hot water systems for apartment buildings typically heat water up to 65 degrees.

Heat losses occur during each circulation through the building, maybe up to 10 degrees.

A tempering valve can be installed at the entrance to every apartment to reduce risk of scalding or a centralized tempering valve system can be used. Older buildings may not have tempering valves.

Modern common hot water systems called **warm water** systems don't heat the water as high but use an ultraviolet filter to kill bacteria and viruses on every circulation through the building.

NSW Gas Distribution Monopoly

Where Jemena hot water meters measure the amount of hot water passing through them in litres, a formula is used to reverse-calculate how much gas would have been used to heat those litres.

It is possible to eliminate a strata building's exposure to the gas distribution network for heating water by switching the common hot water plant to electricity and avoiding gas altogether.

TODAY: gas distribution is a monopoly in strata



TOMORROW: air + electric hot water heating



国家电网公司
STATE GRID
CORPORATION OF CHINA



SINGAPORE
POWER

60%



40%



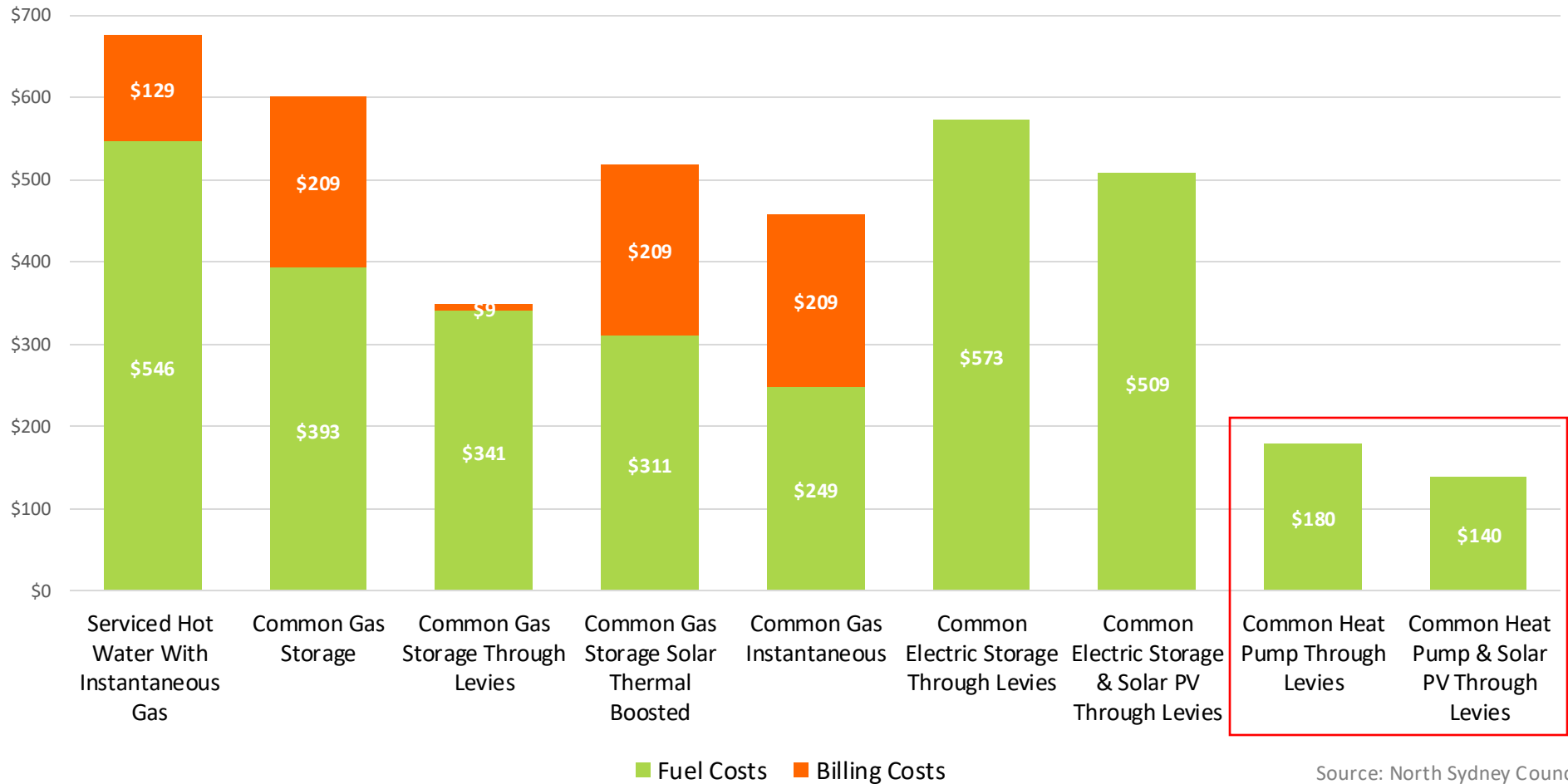
Jemena
bringing energy to life



Source: Mitsubishi Heavy Industries

How do heat pump running costs compare with other methods?

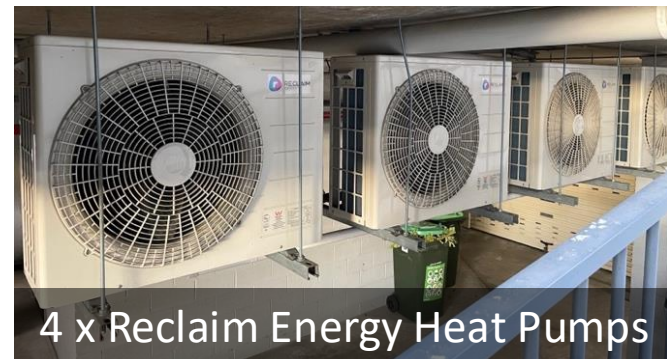
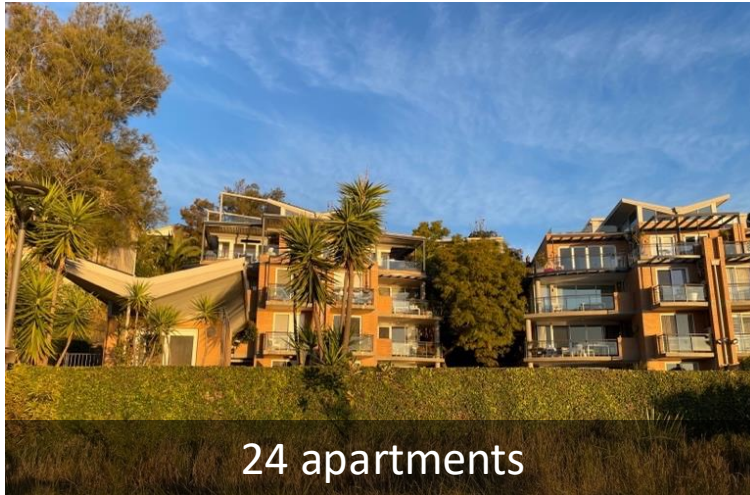
Comparison of Different Common Hot Water Systems by Annual Operating Costs Per Apartment



Source: North Sydney Council

Estimates are based upon 90L of hot water consumption per apartment per day. Maintenance costs for 2 heat pumps for a common hot water plant in a single block of 40 units might be under \$1500 p.a., with two six monthly site visits

Case study – “Bridgeview” Solar and Heat pump retrofit 2023



\$130,000 of common area projects creating a cumulative \$1.6m property valuation uplift

Case Study “Jackson” – Solar & Battery (2023) + Heat Pump Retrofit (2025)

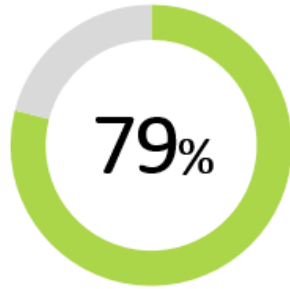
An owner in this building drives an EV and retrofitted an induction cooktop, to make himself one of the small club of completely electrified apartment dwellers in NSW.



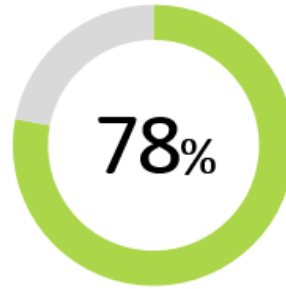


EV Charging

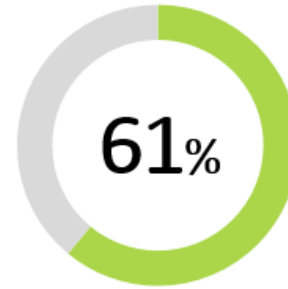
Findings after surveying 700 strata residents on EV charging



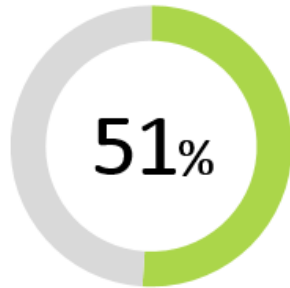
Favoured a **user pays** charging system



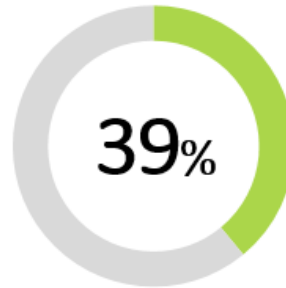
Were in favour of **installing** charging systems now



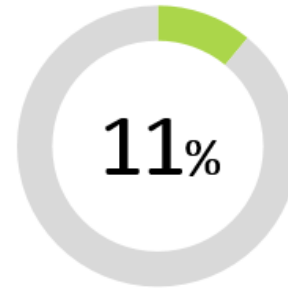
Favoured charging in their **individual lot carspaces**



Expressed **no preference** of hybrid electric vehicles over electric vehicles

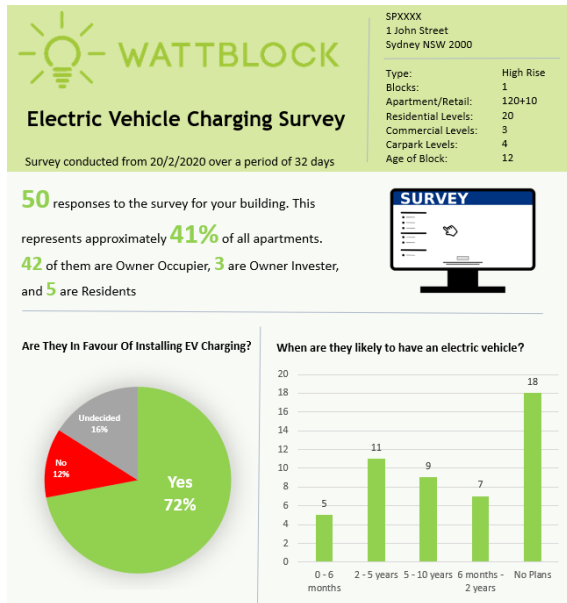


Of vehicles in strata are **family cars**, which is the most common type of vehicle



Knew the location of the nearest public charging station

Prerequisite projects for EV charging installation



EV Charging Survey

- What is the interest in buying EVs in the future?



Understand the Maximum Load

- Feasibility study
 - Electricity monitoring device
- OR
- Upgrade the electrical infrastructure



Passing an EV Charging by-law

- Set a limit on the charging speed
- Allow more EV chargers to be installed

Summary of EV charging scenarios

General power outlet		Chargepoint	
Visitor car space	Individual space/cage	Visitor car space	Individual space/cage
connected to common area meter	connected to common area meter	billing via smartphone app or RFID card	connected to an individual apartment meter located in carpark area
	connected to private lot meter		<div>Cable tray to common meter</div> <div>Flat cable to common meter</div>
			<div>Data cable connectivity for billing and hardware load balancing</div> <div>Wi-Fi for data connectivity for billing, software load balancing and software updates into EV</div>
in either a visitor car space or individual space/cage with mobile phone app/QR Code power activation and Wi-Fi cost recovery which is connected to common area meter			<div>Data cable connectivity for billing and hardware load balancing</div> <div>Wi-Fi for data connectivity for billing, software load balancing and software updates into EV</div>

Using plug-in power meter on GPO from Bunnings



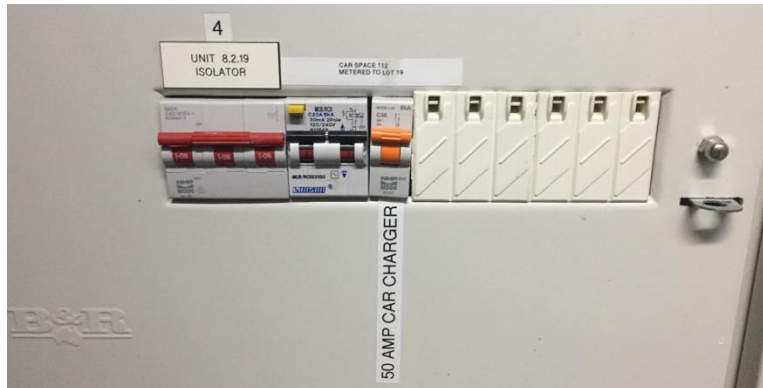
Using QR Code Activated General Power Outlets “Low Power Charging”



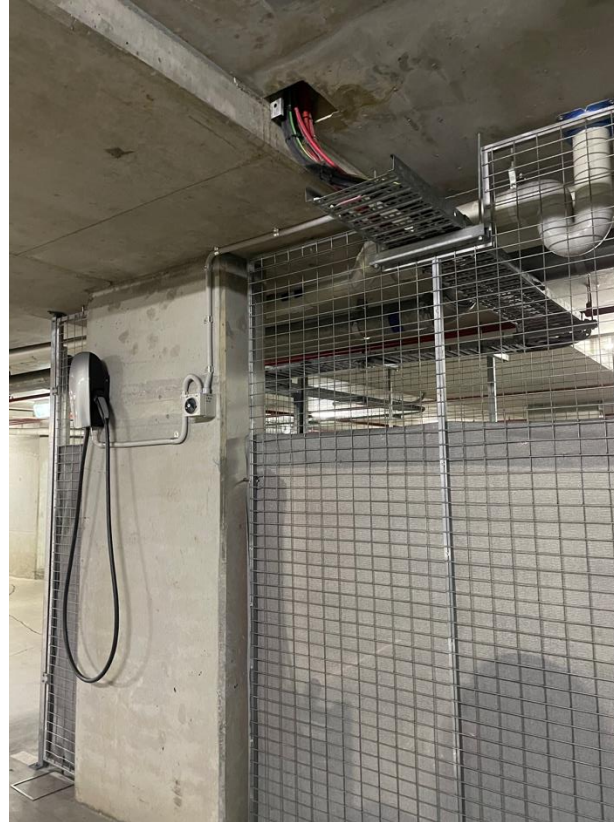
Charging in visitor spots, bollards, booking system, pay with credit card



Charging on private apartment meter located in apartment meter room



Charging off house distribution board located in carpark area



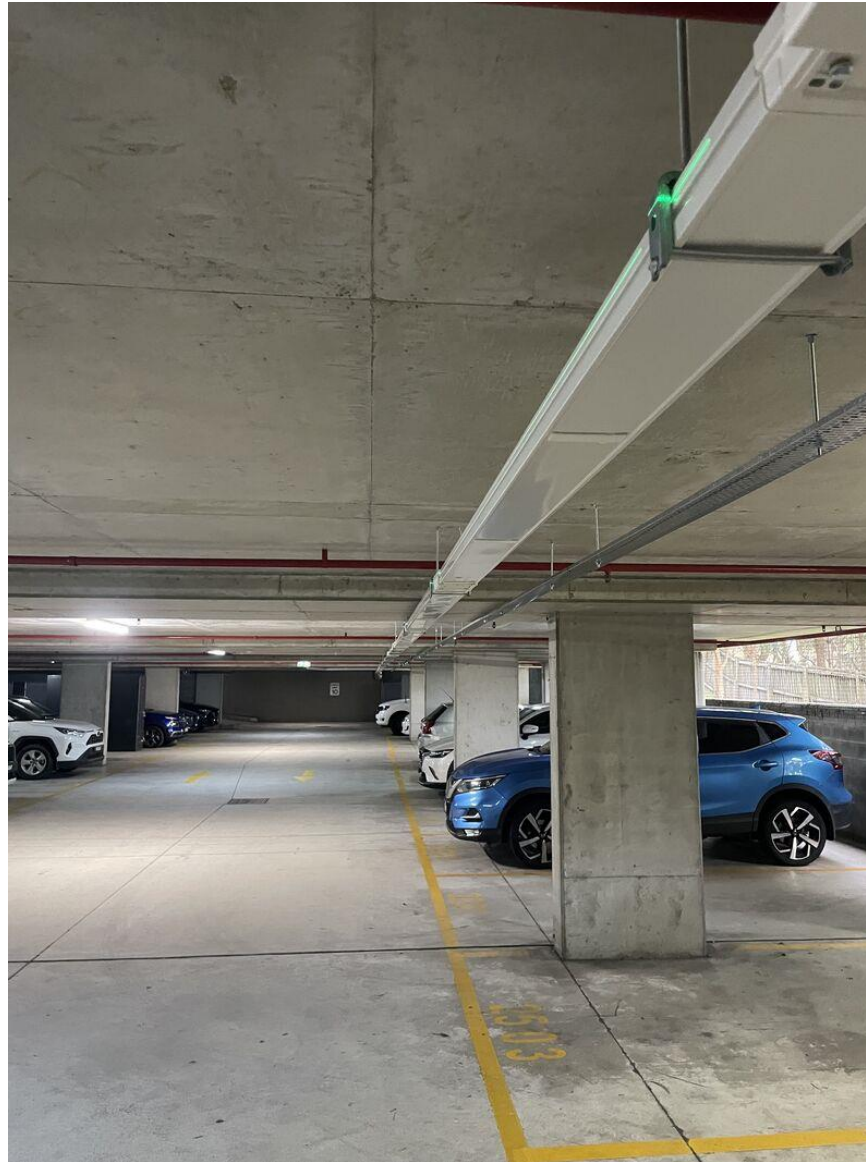
What does a cable tray look like passing every carspace?



Flat cable is an alternative to cable trays



Bus Duct is an alternative to cable trays



Case Study Altair (Potts Point)



- 165 carspaces
- 6 x 30 pole 3 phase distribution boards
- Cable trays passed every carspace
- EV Box chargers
- Karcharger's Dynamic Load Balancing (DLM) hardware + software load balancing system using Wi-Fi and zone Raspberry Pi's
- Wi-Fi connectivity to EV Box chargers
- Owners Corporation subsidizes long cable runs

Altair – Site photos

Cable tray
passes every
carspace



EV Box chargepoints only have electrical connectivity. Communications connectivity to EV Box chargers is via Wi-Fi



Karcharger's Dynamic Load Balancing (DLM) hardware installed in main switchroom. Load balancing can be managed on a per circuit level i.e. not globally

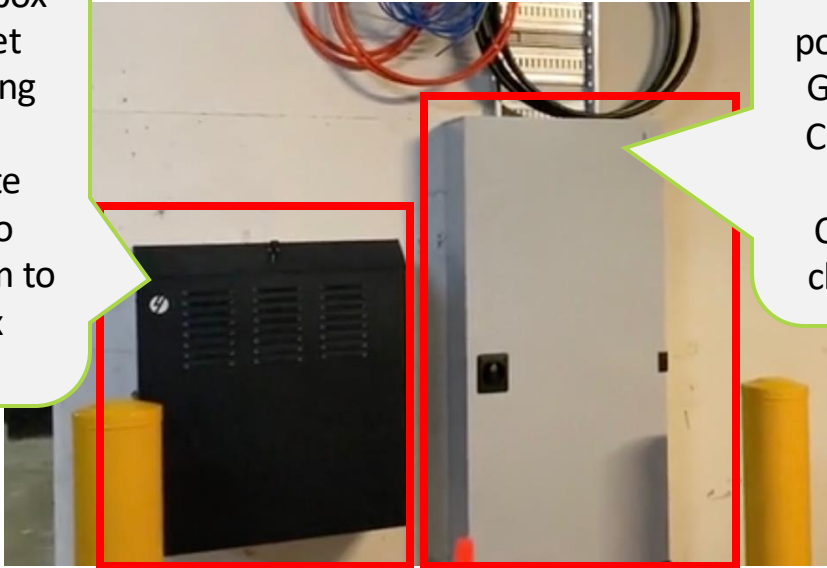
Case Study Richmond (Pymont)



- 106 carspaces
- EV chargepoints in ALL 12 x visitor carspaces
- 3 x 160 amp, 70 pole distribution boards
- Cable trays passed every carspace
- 10 x Tesla Generation 3 chargepoints with Wi-Fi connectivity and software load balancing
- 2 x Chargefox chargepoints with CORE hardware load balancer and 3 network boxes and ethernet connectivity
- Online booking system for visitor spaces

Richmont Data Network Box and EV Charging Distribution Board

Data networking box for ethernet cables coming from Chargemate chargers to connect them to Chargefox network



Electrical Distribution Board which provides power to Tesla Generation 3 Chargepoints and Chargemate chargepoints



Chargemate charger connects to ethernet data networking box connecting to Chargefox network



Tesla Gen 3 charger connects to Wi-Fi i.e. does not need to connect to data networking box

Each floor of carpark has an ethernet communications box for data connectivity to Chargefox chargepoints and a 70 pole three phase distribution board for electrical supply and two yellow bollards to protect the equipment from cars driving into them.

NSW Sustainability Amendment to Strata Act

The Sustainability Infrastructure amendment to the NSW Strata Schemes Management Act passed in February 2021, only requires passing of sustainability infrastructure resolution (similar to an ordinary resolution with a 50% threshold). Your Strata Manager can assist you with preparing motions and resolution for voting at your next Annual General Meeting (AGM) or EGM.

For the purposes of this amendment, sustainability infrastructure means changes to part of the common property (which includes the installation, removal, modification or replacement of anything on or forming part of that property) for any one or more of the following purposes—

- a. **to reduce the consumption of energy** or water or to increase the efficiency of its consumption,
- b. to reduce or prevent pollution,
- c. to reduce the amount of waste sent to landfill,
- d. to increase the recovery or recycling of materials,
- e. **to reduce greenhouse gas emissions,**
- f. **to facilitate the use of sustainable forms of transport, Note. For example, installing electric vehicle charging stations.**
- g. a purpose prescribed by the regulations.

Sustainability infrastructure resolution means a resolution to do any one or more of the following that is specified to be a sustainability infrastructure resolution—

- a. **to finance sustainability infrastructure,**
- b. to add to the common property, alter the common property or erect a new structure on common property for the purpose of installing sustainability infrastructure,
- c. to change the by-laws of the strata scheme for the purposes of the installation or use (or both) of sustainability infrastructure.

New NSW Strata Law Sustainability Requirements from 1st July 2025

- 1) By-laws which ban sustainability infrastructure need to be removed
- 2) Need to consider sustainability at each Annual General Meeting (AGM)

Use a FREE sustainability compliance form [here](#)

- 3) Need to consider costs of sustainability infrastructure when updating the capital works plan

Strata committee archetypes needed

For a strata committee to successfully pass a sustainability project, it needs at least one, if not two of the following **archetypes** on the committee to invest the time in research and educating the other strata committee members and Owners.

Bean counter



“Most important skill”

The energy savings from solar panels, if converted to an interest rate might be up to 14% p.a., compared with a capital works fund of 0.45% p.a. Also, financing solar is fine as long as return outpaces the lending interest rate e.g. 9.7% p.a.

Engineer



Procurement assistance

The engineer on the strata committee can understand the technical detail of quotations from different vendors and provide a view of the value offered by competing quotations.

Sustainability Champion



Carbon emissions

The environmentalist provides the willpower to keep going when the sustainability project seems too hard. They know they are playing a small, but significant part, at a local level in providing a better place for their children and their children's children.

Further information



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<https://www.wattblock.com/>



<https://www.youtube.com/c/WattblockAu/videos>



<https://www.youtube.com/electrifystrata>

Electrify Strata
WhatsApp group



Join 200+ strata electrification enthusiasts

