



Solar Education Kit for Individual
Apartments or Townhouses in Strata

Contact Details

Wattblock

Michael Crouch Innovation Centre

Gate 2, High St, University of NSW 2052

Phone: +61 2 9977 1801

Email: brent.clark@wattblock.com.au

Contents

Introduction.....	3
Understanding Units of Measurement.....	4
Rules of Thumb in Solar.....	5
What is “feed in”?	6
What is a Power Purchase Agreement?	7
9 Steps to Consider for an Individual Lot Owner wanting to Install Solar	8
How to Pass an Ordinary Resolution?	10
Application Form to Install an Individual Solar System	11
Sample By-law for Solar Installation 1.....	13
Sample By-law for Solar Installation 2.....	15
Sample By-law for Solar Installation 3.....	17
Case Study: Common Area Solar & Individual Apartment Solar.....	18
Additional Resources	19

Introduction

The installation of solar for an individual apartment or townhouse in a strata building requires approval from the strata committee, as it is a structural change to the building. The following material aims to provide all the relevant information required for lodging an application to install solar for your own individual apartment or townhouse.



Understanding Units of Measurement

Kilowatt (kW)

A measure of instantaneous **power**.

- The size of a solar system is measured in kilowatts, e.g. a **3.5 kW solar system**
- Solar systems make Direct Current (DC) which needs to be transformed into Alternating Current (AC) which means there is some loss of power in conversion

Kilowatt Hour (kWh)

A measure of **energy**.

- This is what you get billed by your energy retailer for electricity you buy from the grid
- This is the measure of energy which is stored in a battery, e.g. a **14kWh Tesla Powerwall**

Rules of Thumb in Solar

a. The relationship between solar system size in kW and energy produced in kWh

- A 3kW solar system might produce 12kWh of total energy over the course of a day
- Rule of thumb is 4 times the energy in kWh per day is created as the size of the system in kW

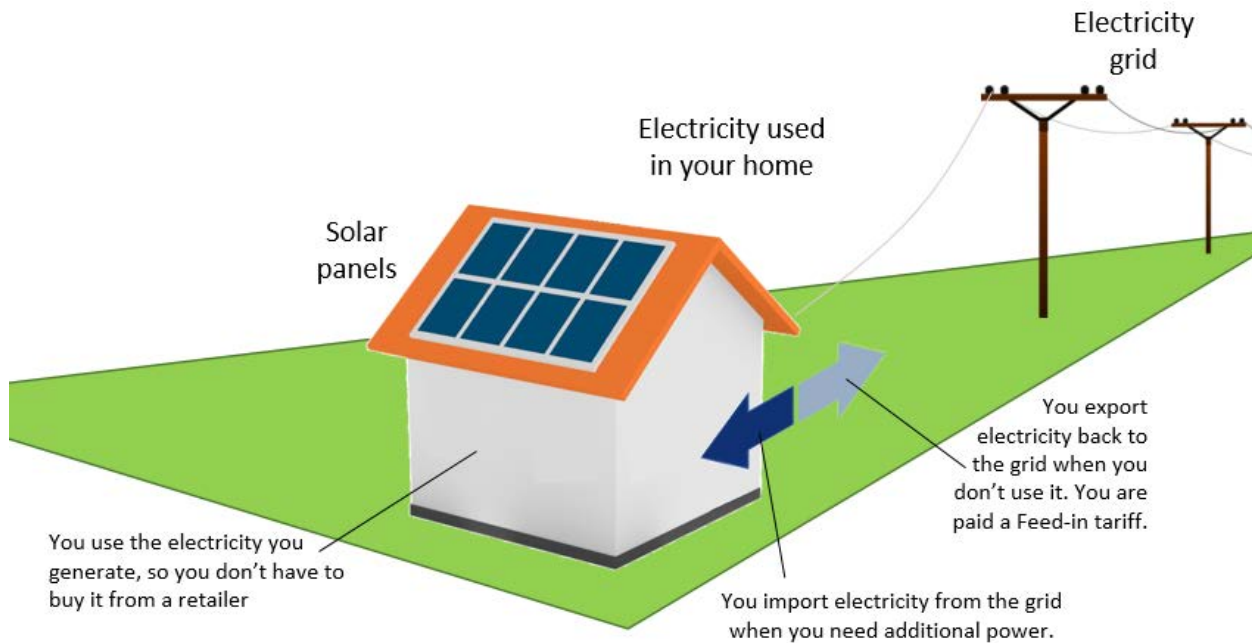


b. The relationship between solar system size in kW and number of solar panels

- Each solar panel is roughly 2m x 1m
- Panels of similar size may produce more or less power, e.g. 250W vs 330W per panel
- The number of panels to make up 1kW of solar system may be 4 panels or 3 panels
- The highest performance panels are the most expensive e.g. 500W to 600W panels coming

What is “feed in”?

Excess solar power generated which cannot be used onsite as there is not enough load, is fed back into the grid. Your energy retailer pays you in cents per kWh, e.g. between 6 and 21c depending on your feed-in tariff. Feed-in is NOT a government rebate.



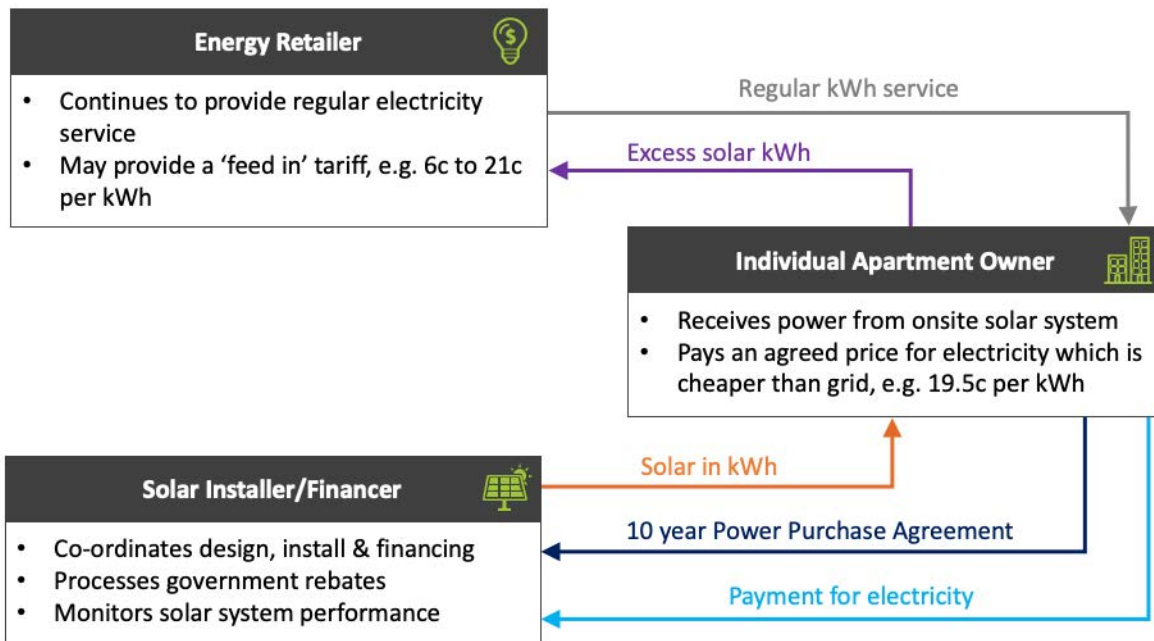
Source: Office of the Tasmanian Economic Regulator

What is a Power Purchase Agreement?

An alternative to purchasing a solar system upfront is a Power Purchase Agreement (PPA). This is a common form of solar finance where a solar installer will provide a solar system at \$0 upfront cost and you will pay a rate for power which comes off the panels (which is lower than your rate for buying from the grid) for a specified term e.g. 10 years.

The PPA provider is responsible for maintenance of the system for the agreed term.

After the PPA term, e.g. 10 years, the Individual Apartment Owner takes responsibility for maintenance of the system and does not pay the rate per kWh generated by the panels. The full benefit of the solar power generated remains with the Apartment Owner for the remaining life of the system, e.g. another 15 years.



9 Steps to Consider for an Individual Lot Owner wanting to Install Solar

1. Understanding if solar energy helps with reducing electricity costs of your building

In order to estimate the savings, metering data is required, which is usually available from the energy retailer when your apartment has a digital common area meter. Such data will allow you to understand the electricity load profile of your apartment, which is critical information to decide on what size system is appropriate. For example, if you have an electric hot water system or an air conditioner, you will need a larger solar system.

2. Council approval

In many cases, solar installations are Exempt Developments, which means you don't need planning approval from Council. If your building is a Heritage Item or is in a Heritage Protection Area, obtaining council approval may be required. To check if this applies to your building, visit your council's webpage. Some councils now have a streamlined Development Approvals web page and a fee free process for solar-only applications.

3. Understanding potential prerequisite projects

If your apartment's electricity meter is on a main switchboard, ceramic fuses (if currently in place) MUST be replaced with RCD (Residual Current Device) switches in order to meet NSW service rules and AS3000 standard, as well as to reduce fire risks. A newly cut meter panel may be needed to fit the size of the bi-directional smart electricity meter, which will be installed after solar installation, which may be larger than your existing electricity meter. If there is not an individual fuse for your electricity meter, you may need to arrange the strata manager to inform all other residents of a power outage in advance of the day of your solar installation.

Roof water-proofing may be needed if the roof is damaged. A structural engineering report may be needed depending on the height of the building (to assess windspeed safety) or for particular types of roofs, e.g. those with wooden cross-beams, to see if they will support the weight of a solar system.

4. Finding a solar installer

Obtain at least 3 quotes from different Clean Energy Council (CEC) approved solar retailers with in-house CEC-accredited installers/designers and make sure they have experience in strata installations.

Visit <https://www.cleanenergycouncil.org.au/consumers/buying-solar/find-an-approved-solar-retailer#card-187285> to find approved solar retailers in your area.

Make sure the installer understands the grid connection process, which is mandatory before solar installation, with different Distribution Network Service Providers (DNSP). If you use websites such as solarquotes.com.au or solarchoice.net.au to get quotes, keep in mind these websites will receive a commission.

5. Selecting appropriate solar system components

A solar system mainly consists of solar panels and solar inverters.

Always choose Tier 1 (top 2%) solar manufacturers which:

- have been producing solar panels for more than 5 years
- are either publicly listed on a stock exchange or have a strong and stable balance sheet
- have fully automated production
- invest significantly in R&D

Always choose a solar inverter that includes a Wi-Fi/App monitoring function. Make sure the offered products are CEC approved. Solar inverter approval can be checked via

<https://www.cleanenergycouncil.org.au/industry/products/inverters/approved-inverters>

Solar panel approval can be checked via

<https://www.cleanenergycouncil.org.au/industry/products/modules/approved-modules>

6. Government Rebate

Solar systems that are smaller than 100kW are eligible for a government rebate called Small-scale Technology Certificates (STC's). Such rebates vary depending on the STC price, which changes every day.

Most of the solar installers provide you with a final price after the reduction of the STC rebate. It is a good idea to ask for the exact STC rebate amount you are getting and check yourself. An online calculator is available at

<https://www.rec-registry.gov.au/rec-registry/app/calculators/sgu-stc-calculator>

7. Understand your electricity tariffs and how they might change

In order to find out your current electricity tariffs and how these might change once your solar system is installed, contact your electricity retailer. Your solar installer should provide modelling which can be used to negotiate with your retailer. It is strongly recommended you receive written confirmation from your electricity retailer on what, if any, changes will occur to your tariffs under the proposed new arrangements.

8. Financing the solar project

You may be offered an upfront (capital expenditure) solar system, a Power Purchase Agreement (PPA) or a lease. Make sure you are familiar with the different models, prior to signing with the solar installer.

9. Passing ordinary resolutions and by-laws for the project

Installation of a solar system in a strata building will require passing of an ordinary resolution of all Owners following passage of the NSW Government's Sustainability Infrastructure amendments to the Strata Schemes Management Act.

How to Pass an Ordinary Resolution?

The installation of solar required the passing of a special resolution up until 2020. However, the NSW state government has recently committed to reforming strata laws to make it easier to install solar. The proposed legislative change will see the voting threshold reduced from 75% to 50%, or the passing of an ordinary resolution.

Your strata manager can assist you with preparing an ordinary resolution for voting at your next Annual General Meeting (AGM) or Extraordinary General Meeting (EGM).

A common mistake in strata schemes is thinking that 50% of all owners need to vote “for” an ordinary resolution for it to pass. However, an ordinary resolution can often be passed with far less than 50% of all owners voting “for” the ordinary resolution.

Passing an Ordinary Resolution can be easy, keeping in mind these three guidelines.

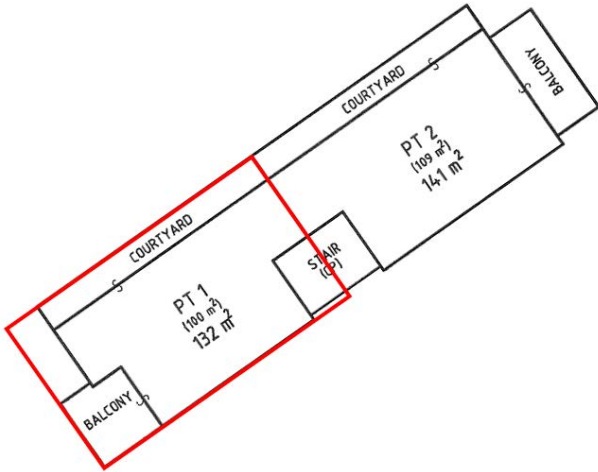
1. You don't need 50% of votes to pass the resolution
 - You only need 50% of the votes to not be against the resolution
2. A quorum is met with 25% of votes
 - Votes can be in person or by proxy
3. Strata scheme AGMs sometimes only just make a quorum, which means the decision is made by far fewer people than all owners
 - Of voters (present or proxy) at the meeting, the resolution will pass if not more than 50% vote against it


For example:

- Total unit entitlements: 100
- 100 owners, all with 1 unit entitlement
- Quorum: 25 unit entitlements present
- Ordinary resolution for solar system is passed if no more than 12 people vote against it (keeping in mind people have to be paid up on their strata levies to be entitled to vote!)

Application Form to Install an Individual Solar System

It is recommended to discuss your plan with others prior to the strata meeting. Changes may be needed in order to gain sufficient support from others to implement your solar plan. The following can form an “Annexure” to the by-law which needs to be passed by your Owners Corporation.

Site Details	
Strata Plan	<i>e.g. SP1000</i>
Address	<i>e.g. 1 John Street, Sydney</i>
Applicant Details	
Lot Number	<i>e.g. Lot 1</i>
Unit Entitlement	<i>e.g. 312 out of 1000</i>
Contact Name	
Contact Email	
Contact Number	
Applicant Unit on Strata Plan	

Solar System Details	
Conceptual Layout	
Solar System Size	<i>e.g. 3.47kW</i>
Number of Panels	<i>e.g. 11 x 315W</i>
Solar Panel Brand	<i>e.g. Longi</i>
Solar Inverter Brand	<i>e.g. Enphase</i>
Inverter Type	<i>e.g. Micro-inverter</i>
Inverter Location	<i>e.g. Rooftop</i>
Battery System Details	
Battery Brand	
Battery Size	
Battery Location	
Solar Installation Details	
Installer Name	
CEC Accredited?	<i>Yes/No</i>
Roof Access (e.g. Requires Cherry Picker?)	
Mounting Solution	
Number of Roof Penetrations	<i>e.g. 1</i>
Tilt Angle & Orientation	
Cabling routes	
Maintenance Schedule	
Schedule	

Sample By-law for Solar Installation 1

Disclaimer

These by-laws are provided for guidance only and were used for the specific circumstances of the Owners Corporations involved. Legal advice should be sought to ensure an appropriate by-law is used in each circumstance. Wattblock accepts no responsibility for the use of these sample by-laws.

In NSW lot owners proposing motions are required to include an explanatory note, which needs to be less than 300 words. An example of the explanatory note is as follows:

“The purpose of this motion is to create a by-law to be added to the existing by-laws of the Owners Corporation. Once the resolution is passed, and registered with NSW Land Registry Services, the by-law will permit the Owner of Lot No. X to install a solar system on the part of the Common Property illustrated on the plan attached to the by-law, in accordance with the technical specifications, which are also attached to the by-law. The terms of the by-law make the current owners and any future owners of the lot responsible for the system, including any impacts it has on Common Property.

Motion

That it be resolved by [ordinary/special] resolution, in accordance with the Strata Schemes Management Act 2015 (NSW), to create the following by-law and lodge the by-law with NSW Land Registry Services, with the common seal of the Owners Corporation to be affixed by [Strata Manager/Secretary].

By-Law No.# – Hot Water Systems and Solar Systems located on Common Property

Where a proprietor of a Lot desires to place hot water or solar systems on the common property:

- 1) The proprietor(s) of the Lot concerned must apply for the works and be granted written consent by the Owners Corporation, at its absolute discretion, prior to the commencement of any works.
- 2) All works must be completed by suitably qualified, licensed, and insured tradespersons where required.
- 3) All works to be at the cost of the proprietor of the Lot concerned.
- 4) Where a gas hot water system is used, a maximum of two gas bottles may be placed on common property and must be located on a suitable concrete slab in a position directed by the Strata Committee. The gas bottles must not interfere with the use of the common property by any other Lot owner or resident.
- 5) Where an electric hot water system is used it must be located on a suitable concrete slab in a position directed by the Strata Committee. The system must not interfere with the use of the common property by any other Lot owner or resident.
- 6) All pipe work must be lagged and insulated in order to avoid any possibility of burning.
- 7) Where solar systems are used:
 - a) the costs of any works within the common property meter room and/or to the common property electrical distribution system as are required under any electrical regulation or standard are the absolute responsibility of the Proprietor/s concerned, and
 - b) all frames and solar panels used must be securely fastened to the common property and in the position approved by the Strata Committee, and
 - c) where required in that approval, the ability of the common property to support the load must be certified by an appropriately qualified person.
- 8) All pipe work and electrical conduit must be installed / positioned and fastened neatly on the common property, and where any components of the installation such as but not limited to the heater tank, pipe work, and

electrical conduit has, by necessity, to be placed in a position that is visible on the front façade of the property, those components must be suitably screened or concealed from view in the terms given in the Strata Committee's approval.

9) Any damage to common property caused by the installation or ongoing use of the hot water system or solar panels must be rectified within 14 days of occurrence by the proprietor of the Lot concerned. Where the proprietor of the Lot/s concerned fails to rectify any damage the Owners Corporation shall be authorised by this Special By-Law to have the work completed and charge any and all costs to the proprietor/s concerned.

10) All costs of maintaining and/or replacing any and all components of hot water systems and solar systems placed on common property under the provisions of this Special By-Law are forever the absolute responsibility of the Proprietor/s concerned.

Sample By-law for Solar Installation 2

Special By-Law No. X – Solar Power System (Lot X)

1. Definitions

In this by-law:

“owner” means the owner for the time being of lot X, and “solar power system” means a photovoltaic array mounted on the roof, its batteries, inverter and all cables forming part of the system.

2. Special Privileges

The owner shall have special privileges in respect of the common property to be occupied by the solar power system for the purpose of installing and keeping it on that common property upon and subject to the conditions set out below.

3. The Conditions

Installation of the solar power system

(a) The solar power system must be installed in a proper and workmanlike manner utilising only first quality materials which are good and suitable for the purpose for which they are used.

(b) The solar power system must be installed in accordance with the manufacturer’s instructions.

(c) Any holes created or penetrations made in the common property during the installation of the solar power system must be adequately sealed and waterproofed.

(d) The owner must ensure that the solar power system is installed with due diligence and within a reasonable time from the date of commencement.

Noise and Disturbance

(e) The owner must ensure that minimum disturbance is caused to the common property and the owners and occupiers of the strata scheme during the installation and operation of the solar power system.

Appearance

(f) The solar power system must not have an appearance, when viewed from ground level immediately outside the building and within the boundaries of the strata scheme, that detracts from the appearance of the building.

Costs of the solar power system

(g) The owner must pay all costs associated with the installation of the solar power system.

Compliance with all Laws

(h) The owner must comply with all statutes, by-laws, regulations, rules and other laws for the time being in force and which are applicable to the solar power system and, if required, must obtain the consent of Council to the solar power system.

Maintenance of the solar power system

(i) After completion the owner must, at the owner’s expense, properly maintain and keep in a state of good and serviceable repair the solar power system and any part of the common property occupied by the solar power system and, when necessary, renew or replace any fixtures or fittings comprised in the solar power system or that common property.

Restoration

(j) Immediately upon completion of the installation of the solar power system the owner must restore all other parts of the common property affected by the installation of the solar power system as nearly as possible to the state which they were in immediately prior to the installation of the solar power system.

Repair of Damage

(k) The owner must, at the owner’s expense, make good any damage to the common property caused as a result of the solar power system no matter when such damage may become evident.

Access

(l) The owners corporation must permit the owner reasonable access through the common property of the strata scheme for herself and her contractors and all their reasonable tools and machinery for the purpose of installing the solar power system and meeting any requirement imposed on the owner by this by-law.

Indemnity

(m) The owner will indemnify and keep indemnified the owners corporation against all actions, proceedings, claims, demands, costs, damages and expenses which may be incurred by or brought or made against the owners corporation arising out of the solar power system or the altered state or use of the common property arising therefrom.

Costs of this By-Law

(n) The owner must pay all of the costs of the owners corporation incurred in connection with the preparation, passing and registration of this by-law and the owners corporation may refuse to execute any document relating to the registration of this by-law until such time as those costs are paid by the owner.

Connection of Utilities

(o) In the event that electrical power, water or any other service is connected to the solar power system and the existing service is separately metered and charged to the account of the owner then the new service shall be installed so as to also be separately metered and charged to the account of the owner.

Breach of this By-Law

(p) If the owner is in breach of any condition of this by-law and fails to rectify that breach within thirty (30) days of service of a written notice from the owners corporation requiring rectification of that breach, then the owners corporation may rectify any such breach and may recover as a debt due from the owner the costs of the rectification together with the expenses of the owners corporation incurred in recovering those costs.

Sample By-law for Solar Installation 3

Special By-Law: Equipment located on Common Property

Where a proprietor of a Lot desires to place equipment such as hot water, solar systems or air conditioning systems on the common property,

- 1) The proprietor(s) of the Lot concerned must apply for the works and be granted written consent by the Owners Corporation, and at its absolute discretion, prior to the commencement of any works.
- 2) All works must be completed by suitably qualified, licensed, and insured trades persons where required.
- 3) All works to be at the cost of the proprietor of the Lot concerned.
- 4) Where an air conditioning or hot water system is used it must be located in a position directed by the Strata Committee. The system must not interfere with the use of the common property by any other Lot owner or resident.
- 5) All pipework must be lagged and insulated in order to avoid any possibility of burning.
- 6) Where solar systems are used:
 - a) the costs of any works within the common property meter room and/or to the common property electrical distribution system as are required under any electrical regulation or standard are the absolute responsibility of the Proprietor/s concerned, and
 - b) all frames and solar panels used must be securely fastened to the common property and in the position approved by the Strata Committee, and
 - c) where required in that approval, the ability of the common property to support the load must be certified by an appropriately qualified person.
- 7) All pipework, wiring and electrical conduits must be installed/positioned and fastened neatly on the common property, and where any components of the installation such as but not limited to the equipment, pipework, and electrical conduit has, by necessity, to be placed in a position that is visible on the front façade of the property, those components must be suitably screened or concealed from view in the terms given in the Strata Committee's approval.
- 8) Any damage to common property caused by the installation or ongoing use of the equipment must be rectified within 14 days of occurrence by the proprietor of the Lot concerned. Where the proprietor of the Lot/s concerned fails to rectify any damage the Owners Corporation shall be authorised by this Special By-Law to have the work completed and charge any and all costs to the proprietor(s) concerned.
- 9) All costs of maintaining and/or replacing any and all components of any equipment including hot water, solar systems or air conditioning systems placed on common property under the provisions of this Special By-Law are forever the absolute responsibility of the Proprietor/s concerned.

Case Study: Common Area Solar & Individual Apartment Solar

Challenge

- An owner investor in an apartment building with 6 units in Newcastle wanted to install solar on the common roof to supply two apartments (3.75kWp each)
- Split incentive issue where the owner pays for the system but the benefit goes to the tenant.
- All owners also agreed to install a common area solar system (5.27kWp) at the same time



Solution

- Divide the roof space equally into 7 sections (for 6 units plus common area)
- Engaged a strata lawyer for a solar by-law \$900
- Engaged a BCA certifier for \$500
- Electrician for a smart meter \$400
- Strata manager charged \$200 for an EGM to pass a special resolution

Benefits

- The Owners Corporation has had no common area electricity bills for the last 12 months after the installation of the 5.27kW system. The solar energy exported back into the grid generates “feed-in” revenue, which results in a net zero bill for the common area.
- The 3.75kW solar system for the individual apartment results in a \$22 per week savings on the tenant’s electricity bill. The owner has increased the rent by \$10 per week, leaving \$12 per week savings for the tenant. This results in a 10-year payback for the owner. Note that the payback period can be improved if the owner increases in rent.

Table 1: Financial summary of the two solar systems

	Common Solar	Individual Solar
System Size	5.27kWp	3.75kWp
Project Costs	\$5,800	\$5,200
Net Annual Savings	\$820	\$520
Payback	7.1 Years	10 Years

Additional Resources

Solar on Strata Whitepaper

https://www.wattblock.com/uploads/4/4/9/8/44984189/solar_on_strata_whitepaper.pdf

Solar for Apartment Buildings Webinar

<https://youtu.be/nsNydhEEn5U>

A Beginner's Guide to Solar (video)

https://www.youtube.com/watch?v=-ijFjDgHF4g&feature=youtu.be&ab_channel=SolarQuotes

A Beginner's Guide to Solar (pdf)

<https://www.solarquotes.com.au/wp-content/uploads/2020/01/solar101-residential-jan-2020.pdf>

Clean Energy Council Online Tool: Find an accredited CEC installer near you

<https://www.cleanenergycouncil.org.au/consumers/buying-solar/find-an-installer>

Clean Energy Council: Solar Guides for Households and Businesses

<https://www.cleanenergycouncil.org.au/consumers/buying-solar/solar-guides>

Clean Energy Council: Guide to Installing a Battery Storage System

<https://www.cleanenergycouncil.org.au/consumers/buying-battery-storage>

Facebook Group: My Efficient Electric Home

www.facebook.com/groups/996387660405677/

Facebook Group: Crap Solar

www.facebook.com/groups/1453886731514406/