



Nicholson Gardens

Renewable energy +
Energy efficiency project

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Owners Corp Chair

The idea:



- Nicholson Gardens has a large roof area, but relatively low energy consumption
- Enough roof space to power all 92 apartments with solar
- Space to install battery storage
- Desire for an equitable model, where everyone benefits
- But how exactly to do it?
- A third party retailer/for profit/not-for-profit/co-op model/community funded???
- Many issues to be resolved

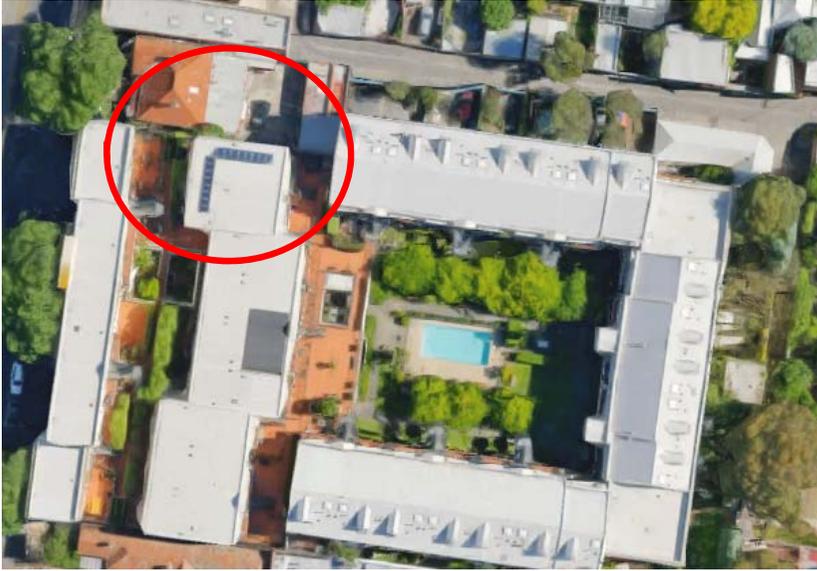
Phase 1: common areas - 2014



Common areas power bill was ~\$12k p.a.

- Installed energy efficient pool pump, LED garden lighting and motion sensors on new LED car park lights
- Fixed timer on garage exhaust fans
- 4kw solar panels installed for average daytime use
- Energy monitoring to gather data for next phase
- Cost approximately \$25k
- Power bill now \$5k
- Saving \$7k per year
- Pay back ~ 3.5 years

Phase 1: small solar installation 2014

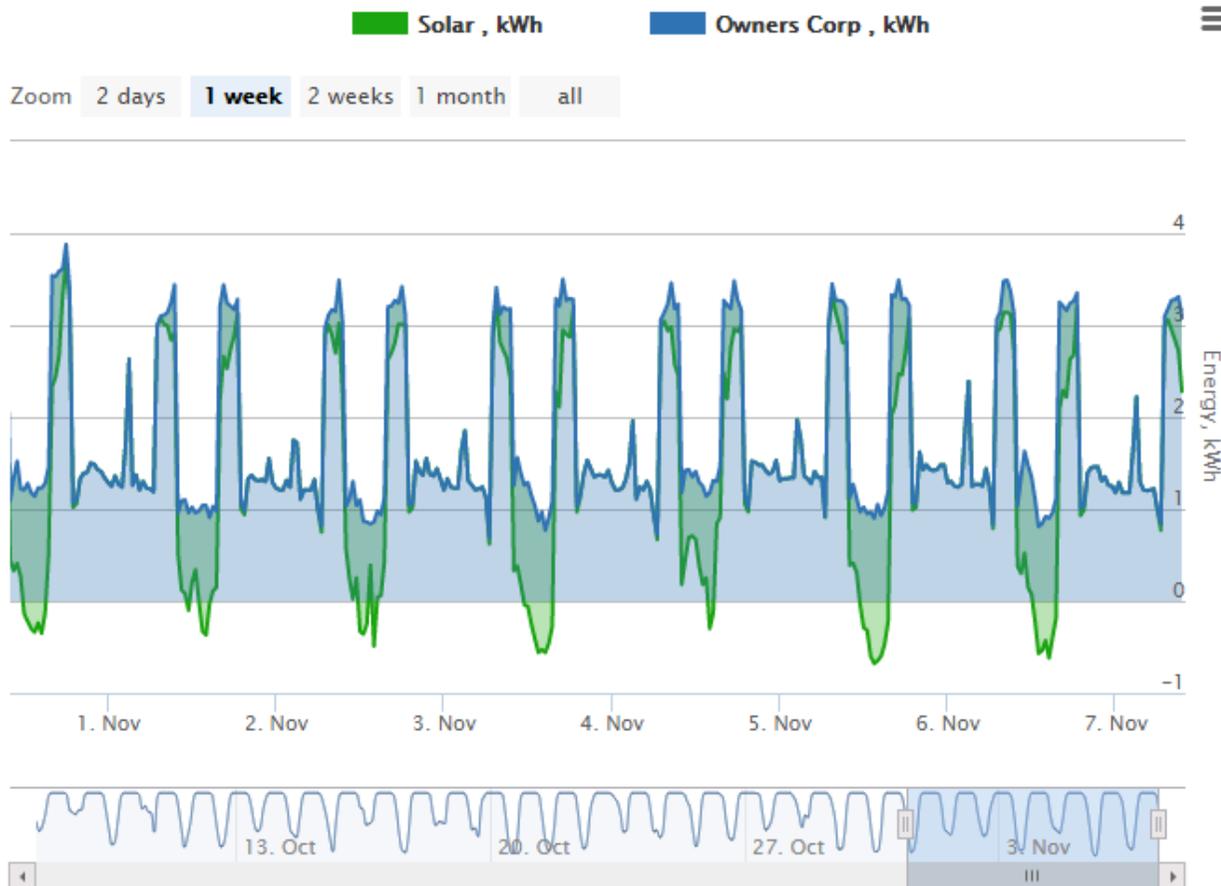


- 4.2 kw panels installed facing north and west.
- As the sun rises in the east, the north facing panels start to generate, with a peak in the middle of the day.
- The west facing panels start to generate later in the day – around 10am, with a peak around 2pm, but continue to generate power until quite late in the day/ evening.
- Plenty of room for more panels in future



Data monitoring shows energy generation and usage by the common areas

Showing data from Oct 7, 2014 12:29am - through to - Nov 6, 2014 11:59pm



- Live data monitoring allows us to see how much energy is being generated and consumed.
- On sunny days, we produce more than we need during the day.
- The excess is sold back to the grid.
- This data is very useful for planning the next stage.

Phase 2: apartment energy efficiency - 2015



- Residents were offered an ‘energy audit’ and refit of lights, insulation and window treatments (at their own expense)
- Many people have already swapped their lights and done some refitting
- Pay back period of 1-2 years

Phase 3: Energy for apartments - 2017

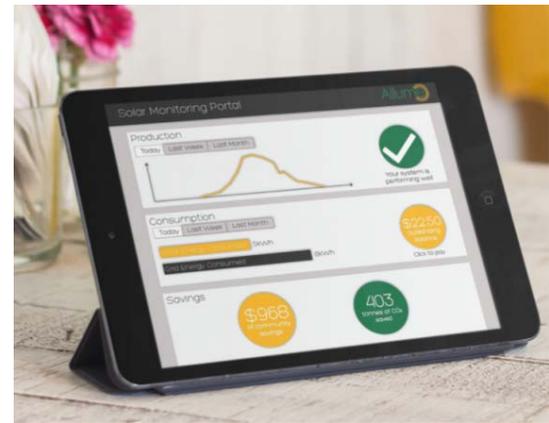


- Working with Allume Energy, a new technology was trialled to share solar between several apartments
- When the system is rolled out, residents who opt in pay a connection fee then purchase solar energy during the day
- Renters or owners can participate
- Power bills pay for solar panels and equipment over time
- More panels can be added as more customers sign up
- 42 kw solar panels would cover average day time energy use by whole site

Phase 3: Energy for apartments 2017

Residents keep their retailer of choice for night times and cloudy days.

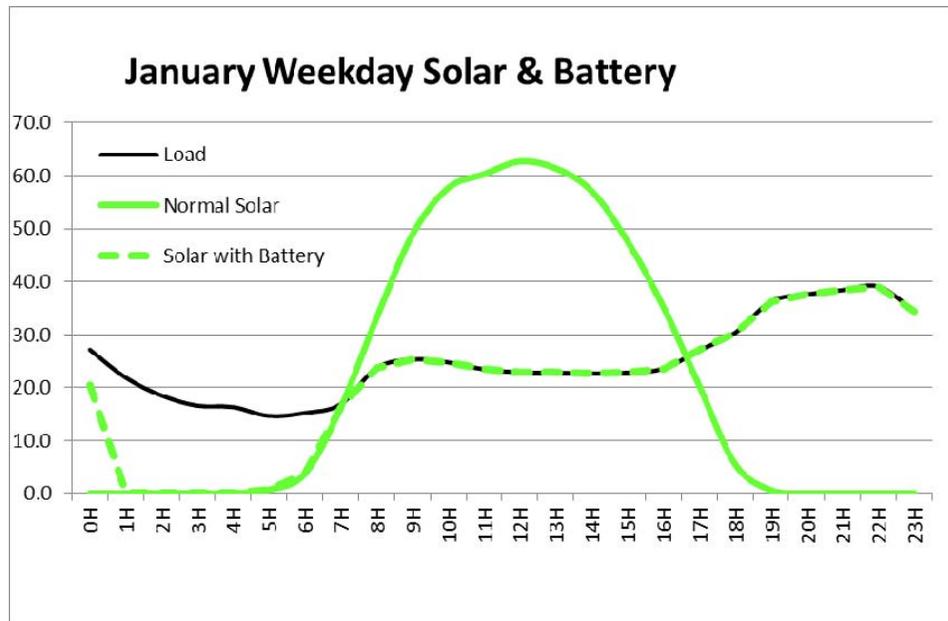
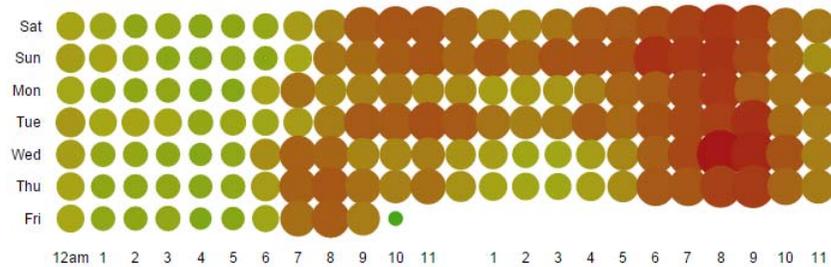
Solar panels cover day time usage.



Allume's 'behind the meter' device shares solar energy between apartments, monitors usage and provides real time data.

Phase 4: Battery storage -2018 (?)

Heatmap for: Site



- Once we have a working solar energy system in place, we will explore battery storage
- More solar panels would be added
- 100 kw would power the entire site with battery storage
- Batteries save the energy from the day for use at the evening peak
- Batteries are still costly, but prices are dropping.
- Should be viable within a few years
- Grid energy would become back up only.