

# Appendix A: Ausnet Network Data

## Report Data for Phillip Island ZSS

Technical Specifications

		Winter								Summer														
Voltage Levels	Name Plate Rating (MVA)	Firm Capacity Winter (MVA)	Load Transfer Capacity (MVA)	Embedded Generation Capacity(MVA)	Estimated Hours at 95% of Peak Load				Name Plate Rating (MVA)	Firm Capacity Summer (MVA)	Load Transfer Capacity (MVA)	Embedded Generation Capacity(MVA)	Estimated Hours at 95% of Peak Load											
66/22 KV	26.0	16.3	6.0	0.0	1.5				26.0	14.6	6.0	0.0	1.5											
<b>Forecast Data Winter</b>																								
		2021 Power Factor		2021		2022		2023		2024		2025		2026										
		0.98		19.7		21.4		21.8		22.1		22.5		22.8										
<b>Forecast Data Summer</b>																								
		2021 Power Factor		2021		2022		2023		2024		2025		2026										
		0.98		19.6		24.9		25.1		25.3		25.6		25.8										
<b>Identified Network Limitations</b>																								
10% POE Max Load at Risk (MVA)				10% POE Max Overload (%)				Hours at Risk (h)				EUE (MWh)				Cost of EUE (\$M)								
2022	2023	2024	2025	2026	2022	2023	2024	2025	2026	2022	2023	2024	2025	2026	2022	2023	2024	2025	2026					
24.9	25.1	25.3	25.6	25.8	70.55	71.92	73.29	75.34	76.71	17.58	19.57	21.89	25.07	27.39	22.23	27.25	32.73	40.75	47.44	0.75	0.93	1.11	1.38	1.61
<b>RIT-D Projects</b>																								
System Limitation					Proposed Project Commissioning					Estimated RIT-D Commencement														
No Data Available																								
<b>Augmentation, Retirement or Derating RIT-D Projects</b>																								
Project Name										Information														
No data to report																								
<b>Distribution HV Feeder Overload</b>																								
Feeder	Customer Numbers	Summer Rating (A)	50% POE						10% POE															
			2021/22		2022/23		2023/24		2021/22		2022/23		2023/24											
			Amps	%	Amps	%	Amps	%	Amps	%	Amps	%	Amps	%										
PH12	4961	285	279.3	98	282.15	99	285	100	279.3	98	282.15	99	287.85	101										
<b>Distribution HV Feeder Overload Options</b>																								
Feeder	Potential Solution	Estimated (Month, Year)	Summary of location of Relevant Connection Points						Estimated Required Reduction in Load (MW)			Comments												
PH12	Feeder can be risk managed until 2022 with temporary transfers.	December, 2023							0.1															

Figure 27: Report Data for Phillip Island ZSS

## Report Data for WGI-PHI

Sub Transmission Loop Forecast

Subtransmission Lines	Firm Capacity (MVA) (W)	2021 Power Factor (W)	2021 Maximum Demand (MVA) (W)	2022 (W)	2023 (W)	2024 (W)	2025 (W)	2026 (W)	Firm Capacity (MVA) (S)	2021 Power Factor (S)	2021 Maximum Demand (MVA) (S)	2022 (S)	2023 (S)	2024 (S)	2025 (S)	2026 (S)
Wonthaggi - Phillip Island	0	1	19.7	22.5	22.9	23.2	23.6	24	0	1	19.6	26.1	26.4	26.6	26.9	27.1

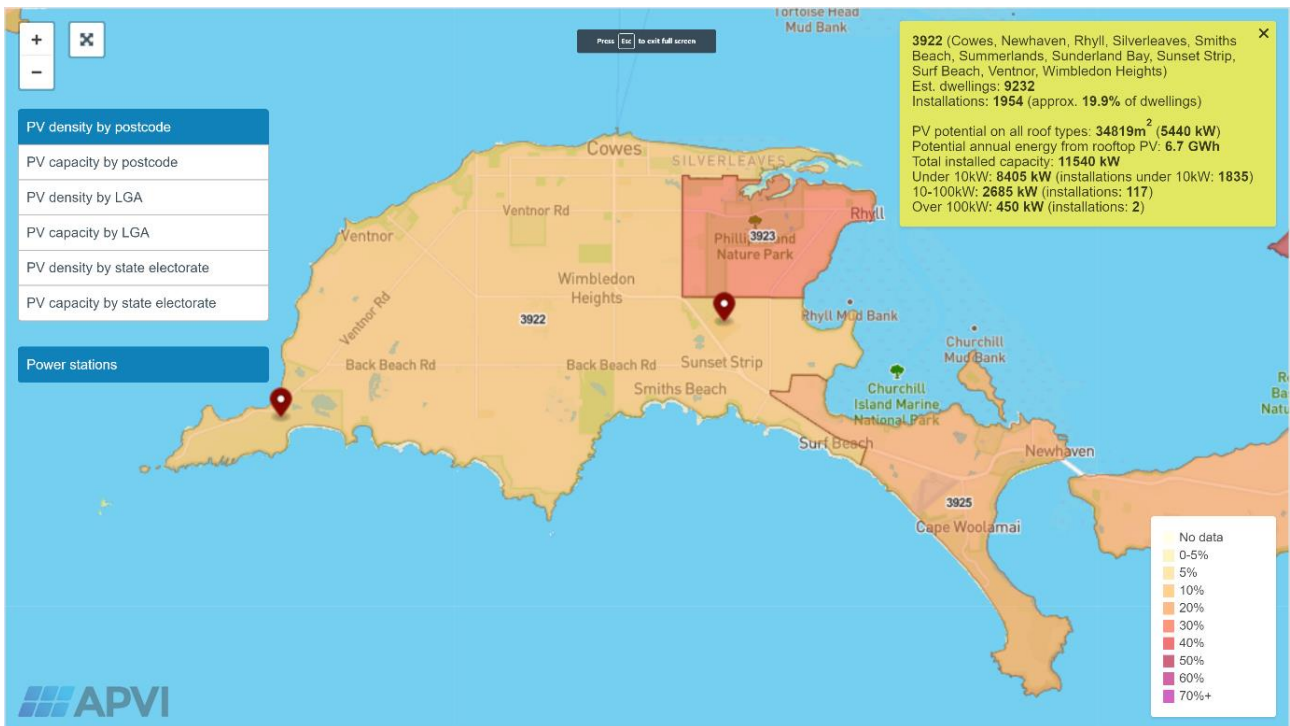
  

Subtransmission Lines	Terminal Station	Installed Capacity (MVA)	Firm Capacity (MVA) (W)	Load Transfer (MVA) (W)	Embedded Generation Capacity (MVA) (W)	Estimated Hours at 95% of Peak Load (W)	Firm Capacity Summer (MVA) (S)	Load Transfer Capacity (MVA) (S)	Embedded Generation Capacity (MVA) (S)	Estimated Hours at 95% of Peak Load (S)
Wonthaggi - Phillip Island	MWTS	41	0	8.6	0	2.5	0	8.6	0	4.39

Figure 28: Report data for Wonthaggi – Phillip Island (WGI-PHI) sub transmission line forecast

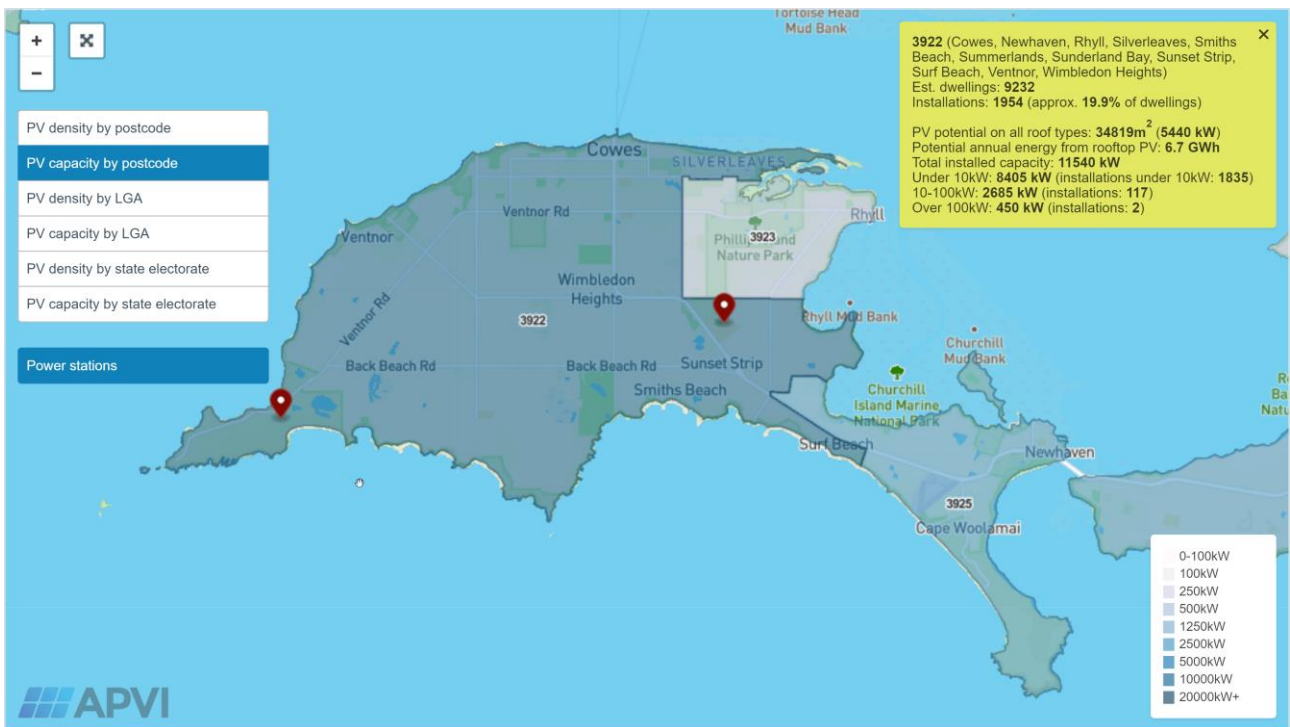
# Appendix B: APVI data

Figure 29 shows the PV density for all postcodes in Phillip Island:



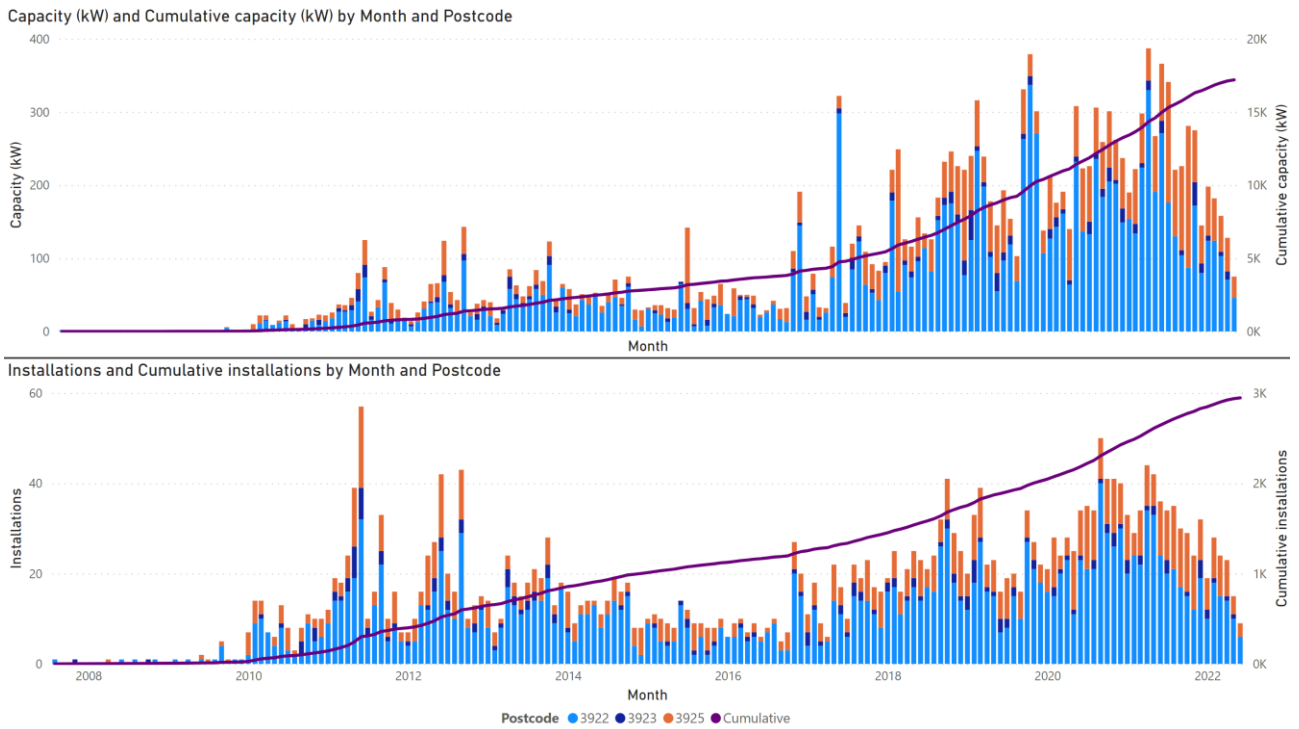
**Figure 29: PV density by postcode**

Figure 30 shows the PV capacity for all postcodes in Phillip Island.



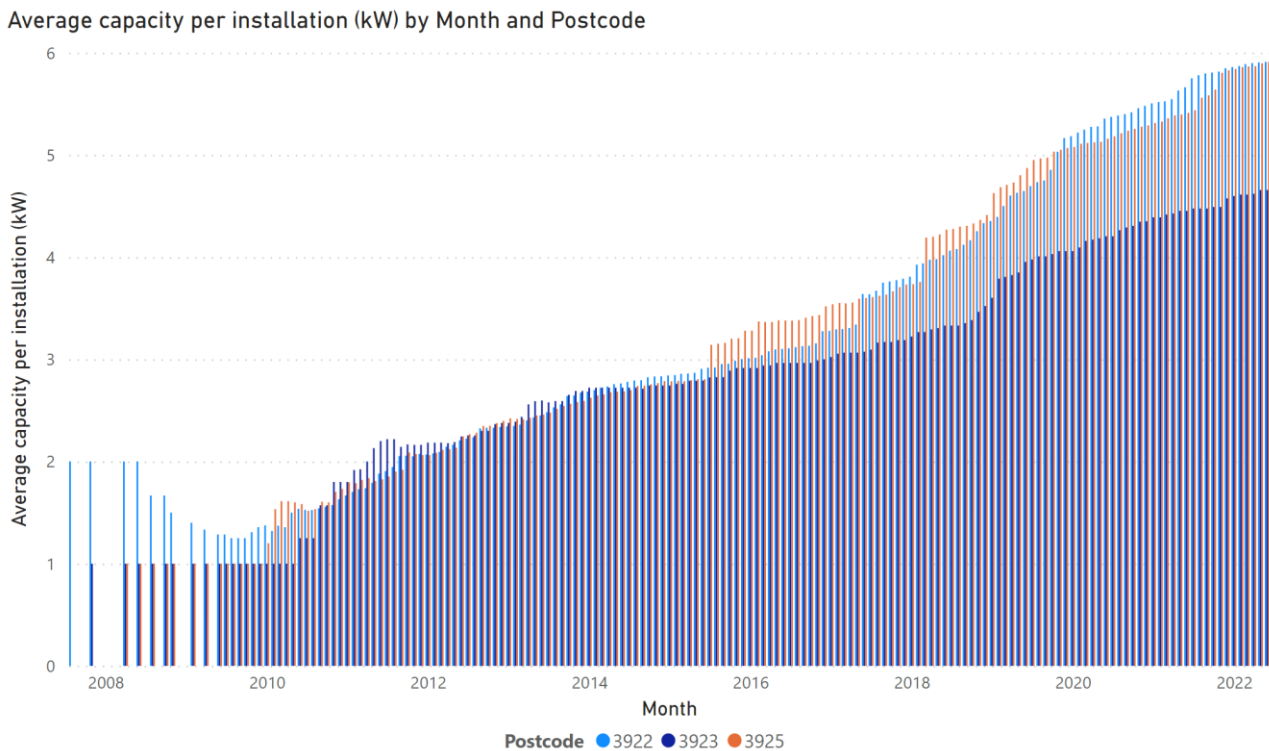
**Figure 30: PV capacity by postcode**

Figure 31 shows the solar capacity and installations by each postcode.



**Figure 31: Solar capacity and installations, by postcode**

Figure 32 shows the average capacity per installations by each postcode.



**Figure 32: Average capacity per installation, by postcode**

Figure 33 shows the average capacity per installation has gradually grown to 5.84 kW as of June 2022.

Average capacity per installation (kW) by Month

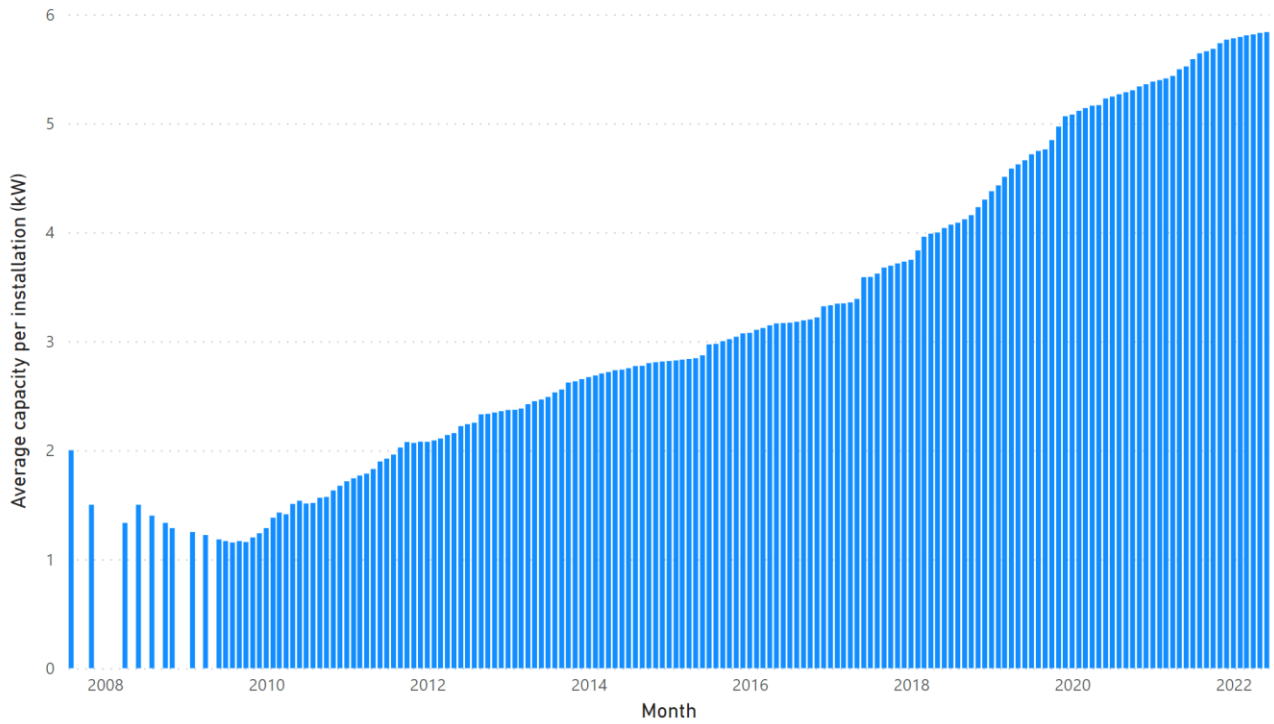


Figure 33: Average solar capacity per installation (kW) by month

Cumulative capacity (kW) and Cumulative installation by Month

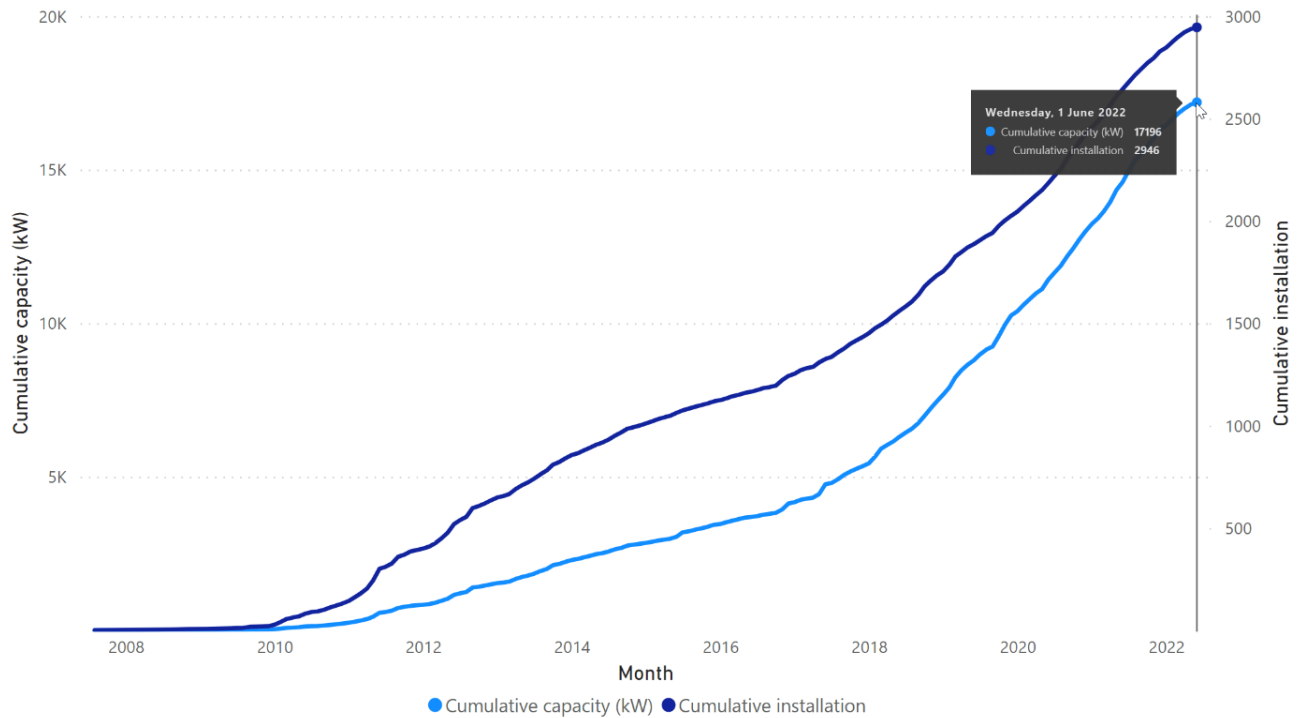
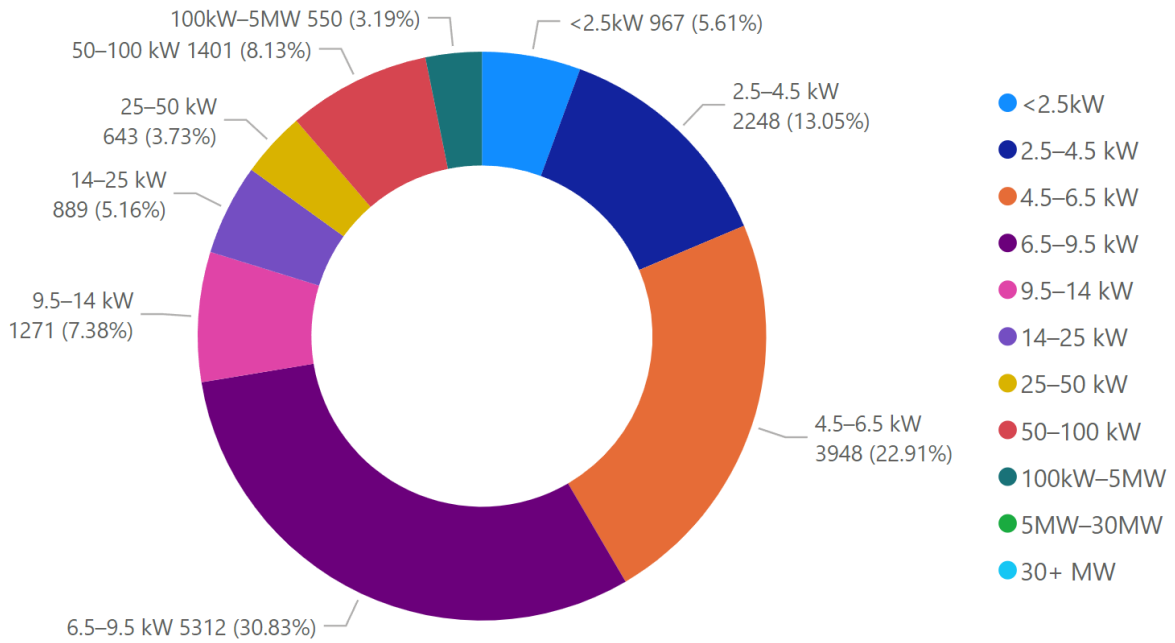


Figure 34: Cumulative solar capacity (kW) and cumulative solar installation by month

Figure 35 shows the current cumulative solar capacity by installation size.

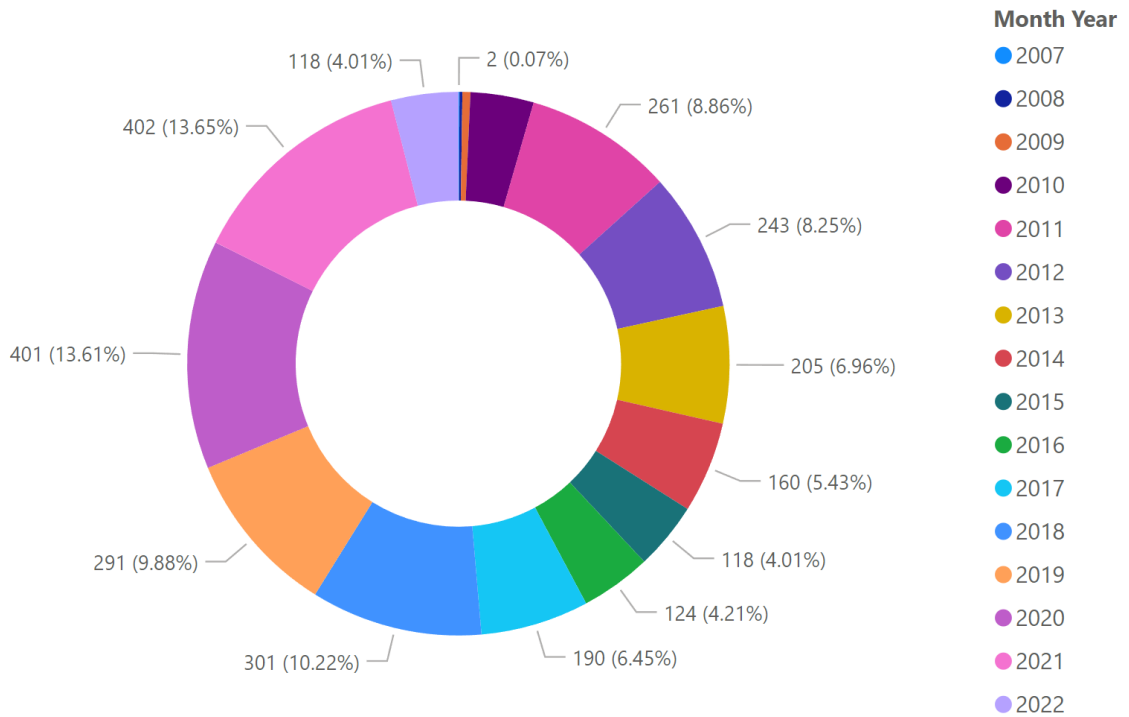
Combined postcode data by installation size



**Figure 35: Total solar capacity by installation size**

Figure 36 shows the number of solar installations per year in Phillip Island.

Installations by Year



**Figure 36: Solar installations per year**

## Appendix C: Community solar installations

Table 15 provides a list of all known community solar installations within Phillip Island, based on a tour conducted by Heather Smith:

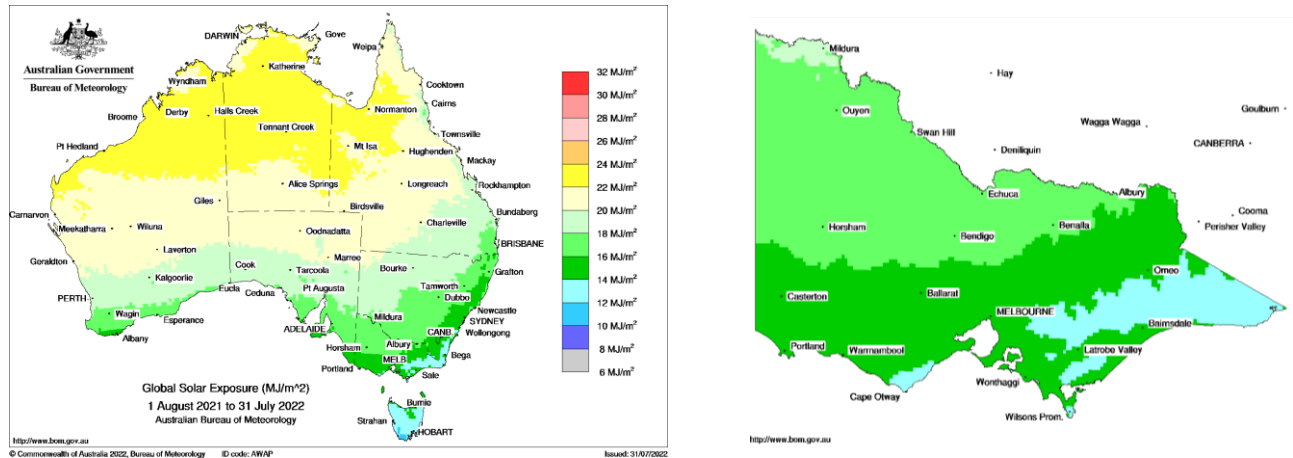
**Table 15: Community solar installations<sup>29</sup>**

Location	Installed capacity (kW)
<b>Salt Water</b>	
<b>Newhaven Boys Home</b>	
<b>Chocolate Factory</b>	100
<b>Churchill Island</b>	
<b>Vietnam Veteran's Museum</b>	30
<b>Newhaven College</b>	243
<b>Phillip Island Nature Parks – Penguins</b>	206
<b>Phillip Island Nature Parks – Nobbies</b>	81
<b>Phillip Island Nature Parks – Koala Centre</b>	
<b>Phillip Island Adventure Resort</b>	100
<b>Phillip Island Golf Club</b>	40
<b>Westernport Water Newhaven Office</b>	33
<b>Westernport Water Church Street Pump Station</b>	3
<b>Westernport Water Wastewater Treatment Station</b>	39.8
<b>Gap Road Battery site Ausnet Battery</b>	4500
<b>Gap Road Battery site DELWP Battery &amp; Tariff Trial</b>	500
<b>Pole Battery Feasibility Study</b>	
<b>Microgrids for Emergencies</b>	
<b>Cowes Industrial Estate</b>	
<b>Purple Hen Winery</b>	
<b>Phillip Island Winery</b>	
<b>Pino's</b>	
<b>Total</b>	5875.8

<sup>29</sup> Heather Smith, Phillip Island Tour, 7<sup>th</sup> May 2021.

## Appendix D: Solar and wind data

Figure 37 shows annual solar irradiance in Australia and Victoria, respectively.



**Figure 37: Australian solar irradiance (annual daily average) in the last 12 months**

The Gippsland area is often not considered as a good solar resource area, due to comparison within an Australian regional context.

Table 16 shows the general solar radiation data at Phillip Island:

**Table 16: Solar radiation data at Phillip Island**

Description	Abbreviation	Value	Unit
Direct normal irradiation	DNI	1592.9	kWh/m <sup>2</sup>
Global horizontal irradiation	GHI	1544.9	kWh/m <sup>2</sup>
Diffuse horizontal irradiation	DIF	614.8	kWh/m <sup>2</sup>
Global tilted irradiation at optimum angle	GTI_opta	1763.3	kWh/m <sup>2</sup>
Air temperature	TEMP	14.6	°C
Optimum tilt of PV modules	OPTA	33	°
Terrain elevation	ELE	48	m

Figure 38 shows wind rose for Phillip Island based on data from Jan 2017 – Dec 2022. The rose indicated the wind conditions are calm to moderate for majority of the year.

### Wind Rose

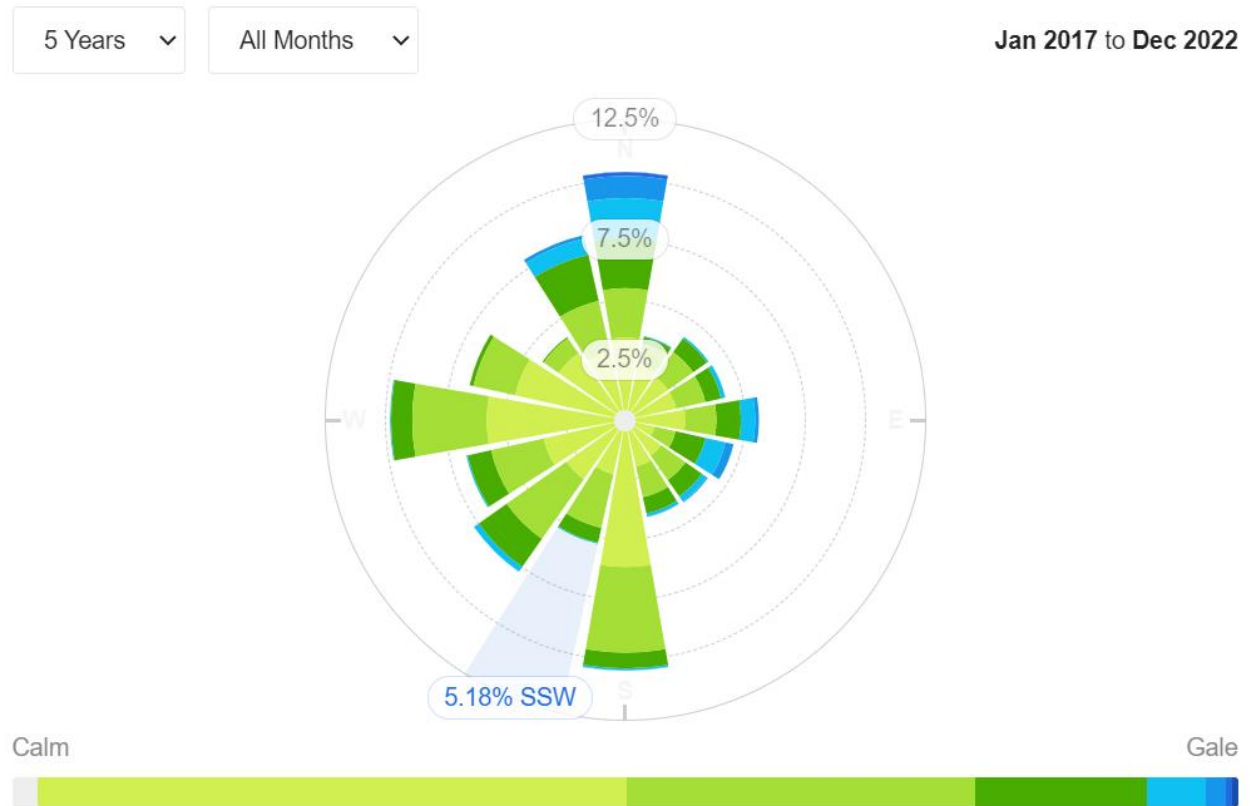


Figure 38: Phillip Island wind rose (Jan 2017 - Dec 2022)<sup>30</sup>

<sup>30</sup> [Phillip Island Wind Forecast, VIC - WillyWeather](#)