**Roof of 6 Turvey Rd, Blacktown**

4.6 kW system

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | SunSpoT | Python | SunSPoT | Python | Python |
|  | Base case | copying user inputs from SunSPoT and assuming Origin flat rate NSW (Endeavour) | Adapting both to include no smart meter, and a bill of [{"total": 500, "start\_date": "2019-07-01", "end\_date": "2019-09-30"}], and tariff of Origin Flat Rate NSW (Endeavour area) | | Using updated location, AC and dryer use |
| PV generated | 7103 | 7103 | 7103 | 7103 | 7103 |
| PV per kW | 1542 | 1544 | 1542 | 1544 | 1544 |
| Bill savings | 1002 | 980 | 708 | 696 | 710 |
| PV to grid | 5141 | 4912 | 6359 | 6423 | 6346 |
| PV self-consumption | 1961 | 2190 | 744 | 679 | 757 |
| FiT payment | 571 | 393 | 508 | 513 | 507 |
| New bill | 372 | 971 | 87 | 79 | 84 |
| Old bill | 1374 | 1951 | 795 | 775 | 795 |

Next: comparing output load profiles at this stage

Initial attempt; quite different both in magnitude and shape

A screenshot of a cell phone

Description automatically generated

Next attempt; remedied the latitude and longitude, AC\_type from ‘none’ to ‘NoAirCon’ and dryer\_usage from ‘high’ to ‘High’. This produced a much more similar shape, however the magnitudes vary on the order of ~0.01.

The change in shape is likely to be due to the handling of dryer use. SunSPoT uses capitals, which is not recognised in the code. I have updated the script on branch ‘PH\_testing’ to allow this to be accepted.

A screenshot of a social media post

Description automatically generated

**Roof of 30 Avenue Rd, Mosman**

9.9 kW system

Tested defaults, then added a 300,300,300 ToU bill, then tested changing gas heating, hot water and cooking, air conditioning, pool pump, number of occupants, number of refrigerators and home type. All gave similar outputs between SunSPoT and the code, with the most common difference being about 30-100 kWh variation between the self-consumption and exports. The load profiles were identical.

One issue I noticed was that if the user inputs a ToU bill but says that they do not have a smart meter (either through error or misunderstanding) the load profile is set to null and the website produces an error.

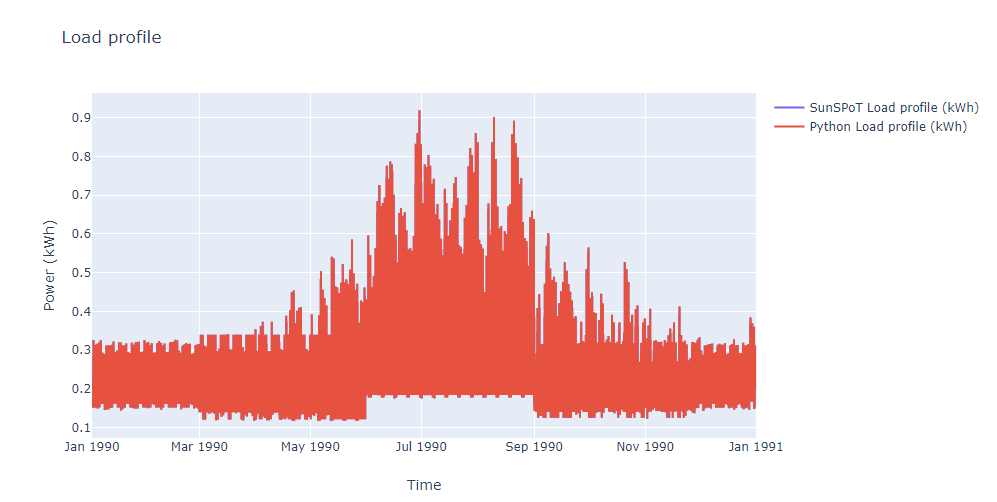
Under Bill Information, changing tariff type after a bill is entered does not clear the bill of the other type, instead the bills are merged to include both total usage and the ToU breakdown. Also, on a similar note, if the user is calculating the savings for multiple roofs without clearing the cache, the bills are copied across.

The last comment, not to do with the code, is that sometimes even after providing usage details the blue loading box with “We are calculating your bill savings from PV using an average load profile for households in your area. This may not reflect your usage and bill savings will therefore not be accurate for you. For better estimates of the savings, click "Customise usage inputs"” appears.

**Phase 2: saving\_estimator code as of 24/1/12**

Testing on 1-13 Boronia St, Redfern with a 3.1kW system.

Initially load profiles not matching, however this may be because the “first pass” uses default location instead of user’s location. After clicking through and selecting a tariff (Origin Energy TOU Residential NSW) both the test and SunSPoT load profiles were identical.



Numbers are as follows

|  |  |  |  |
| --- | --- | --- | --- |
|  | SunSpoT | Python | Explanation |
|  |  |  |  |
| PV generated | 4945 | 4945 |  |
| PV per kW | 1571 | 1595 | Rounding error (I used number reported on SunSPoT) |
| Bill savings | 696 | 741 | Based on PV to grid vs self-consumption |
| PV to grid | 3162 | 3144 | ? total PV is identical, but ratio is different |
| PV self-consumption | 1783 | 1801 | ? |
| FiT payment | 284 | 282 | Correct as using reported PV to grid |
| New bill | 794 | 748 |  |
| Old bill | 1490 | 1490 |  |

Switching tariff to Powershop Flat Rate NSW and dwelling to semi-detached

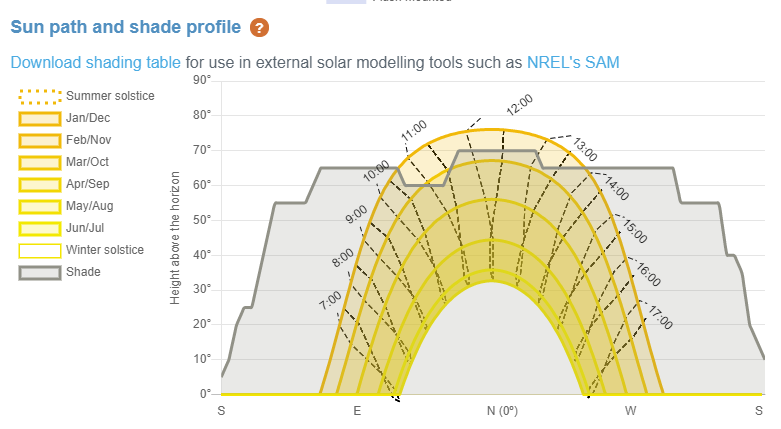
|  |  |  |  |
| --- | --- | --- | --- |
|  | SunSpoT | Python | Explanation |
|  |  |  |  |
| PV generated | 4945 | 4945 |  |
| PV per kW | 1571 | 1595 |  |
| Bill savings | 757 | 763 |  |
| PV to grid | 3125 | 3084 |  |
| PV self-consumption | 1820 | 1861 |  |
| FiT payment | 318 | 314 |  |
| New bill | 920 | 915 |  |
| Old bill | 1678 | 1678 |  |

Identical load profiles also observed when changing; tariff, family size, pool pump, controlled load, AC\_type, dwelling, smart meter, gas heating, gas hot water, gas cooking, number of rooms heated and number of refrigerators.

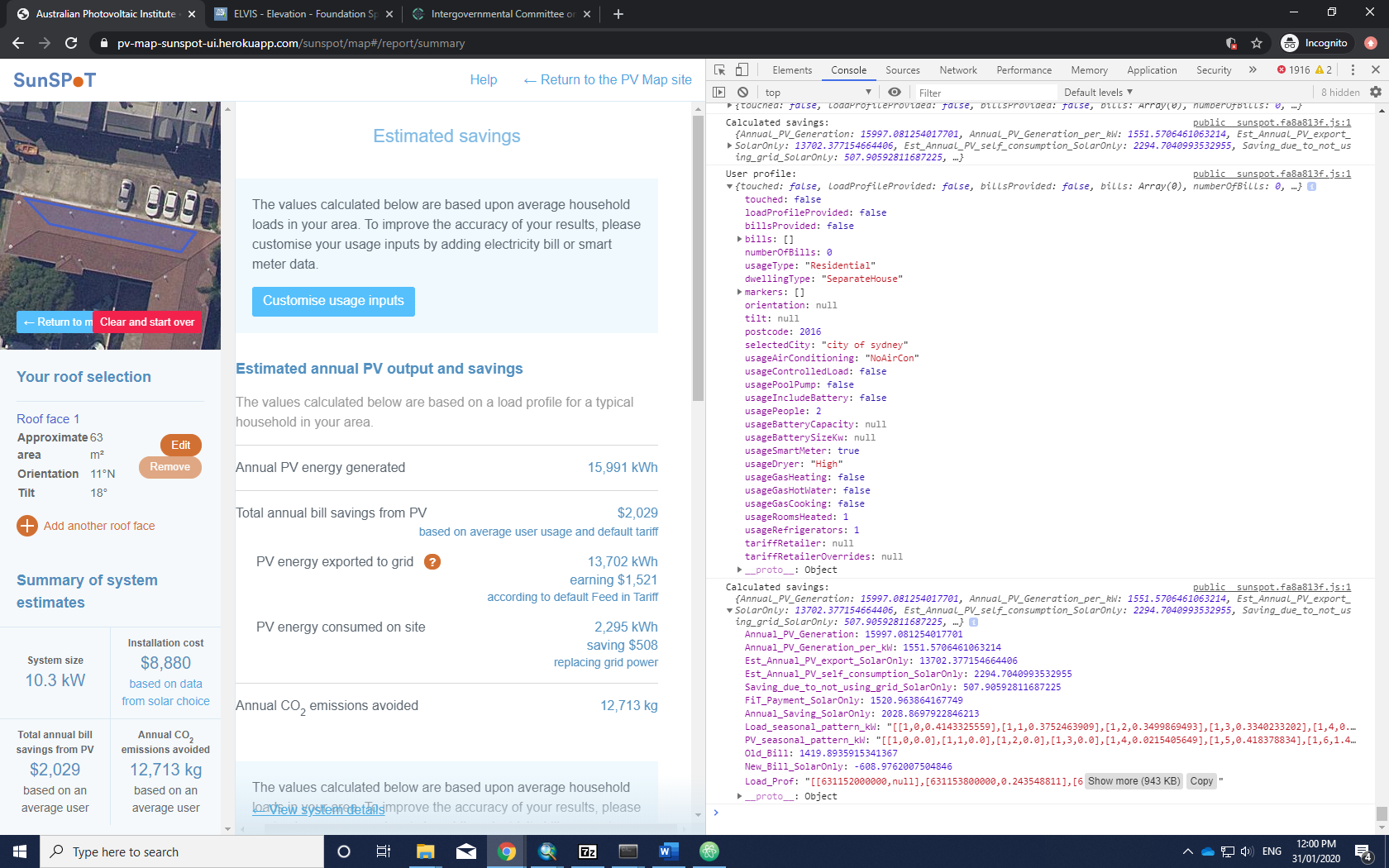
Next:

* test if having flat and TOU bill has any impact. Does code cope?
  + **Yes**
* input a load profile
  + outputs load profiles and values are different -> depends on values for user input. After changing user inputs to be identical the load profiles were identical and the output values very similar (+-10)

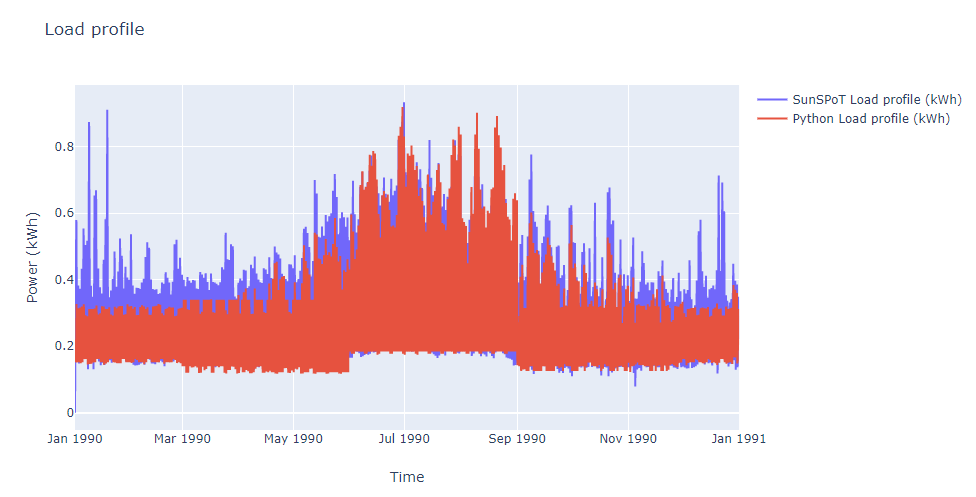
**Redfern 2**



Confusing shade profile: nearly always shaded?



First run outputs



Load profile is also quite different, however after adding an identical tariff (AGL flat rate NSW) to both, they become identical. -> **The curve shown in blue is the default and has not been altered to the default user inputs.**

