



Exemplary Advances

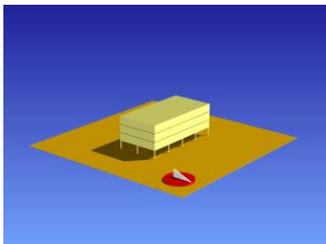
2014 December "Exemplary Advances" is the newsletter for Exemplary Energy Partners, Canberra. Feel free to forward it to friends and colleagues. Click here to [subscribe](#) or [unsubscribe](#). Feedback is most welcome.

Past editions of "Exemplary Advances" are available on our [website](#).

Latest Real Time Year (RTY)

The RTYs to the end of November 2014 are now available for CBR, PER and SYD. Click [here](#) for details. Superseded RTYs are available at a discount of 10% per month past (20% for student, academic and other non-commercial use). So please [enquire](#) about formats and delivery times.

Exemplary Weather and Energy (EWE) Indexⁱ



2014 November	Canberra		Perth		Sydney	
	Heat	Cool	Heat	Cool	Heat	Cool
10-Storey	-	14.7%	-	-6.8%	-	8.0%
3-Storey	-	20.3%	-	-8.7%	-	10.2%
Supermarket	-72.4%	50.5%	-	-20.4%	-100%	26.0%
Solar PV	4.9%		2.5%		2.9%	

Sydney had an unusually warm November – although the maximum temperature for the month is about 5°C lower than in the reference year (Nov 2006) - but the minimum and daily average temperatures are higher. HVAC systems did not work at peak load but they had to work relatively harder for longer. This is particularly reflected in the supermarket which has longer operation hours than the offices and is accordingly much more affected by temperature minima than the offices.

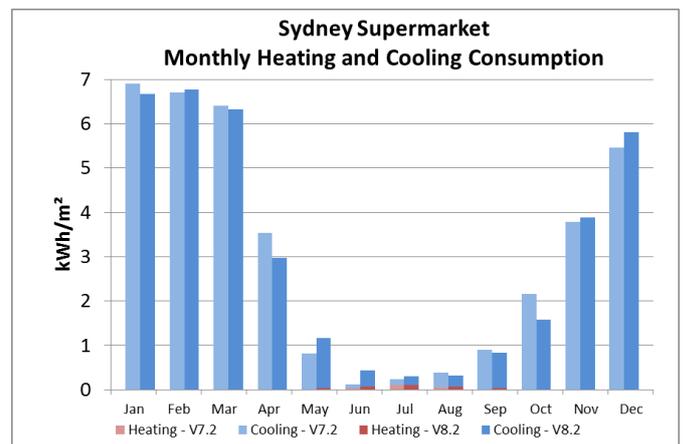
Canberra had a very hot November. The maximum, minimum and daily average temperatures are all higher than the reference year. The impact of this is clearly evident in all our three building archetypes and our supermarket is affected most.

Perth had a cooler November this year. Our 3 commercial building models show that the energy consumptions are all lower than in the reference year.

The energy consumption outcomes are tabulated and graphically summarised for ready [reference](#).

EnergyPlus version 8.2.0

Using the latest EnergyPlus Version 8.2.0 the energy consumption calculations remain consistent with past simulations using E+ v7.2.0 for the two office models in Sydney. However our supermarket model shows significant differences, probably reflecting the application of improved algorithms for ground heat exchange since the model is single storey with uninsulated slab on ground.



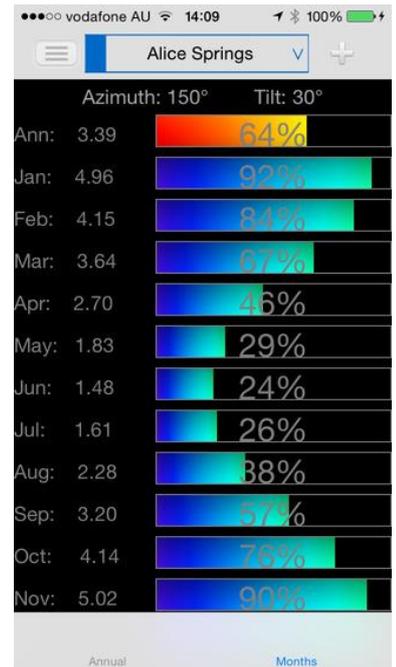
PV_OptiMizer – iPhone version launched



Our solar PhotoVoltaic (PV) evaluation app for small to medium sized installations is now available on iOS. The tool responds dynamically to the orientation and tilt of the phone (or other device) to calculate in accordance with the [CEC Guidelines](#) the solar PV output of panels installed with that same geometry. Lay it on your roof to see what you can expect with the lowest cost installation. Tilt and turn it to see how much more you can get by upgrading to a framed and optimised system.

Both versions are available for free.

The free download holds data for a tropical, an arid and a southern location. In-app purchase of data for other locations and for editing the system components allows it to be used as a design tool. Click here for your own free trial of the [Android](#) or [iOS](#) version now.

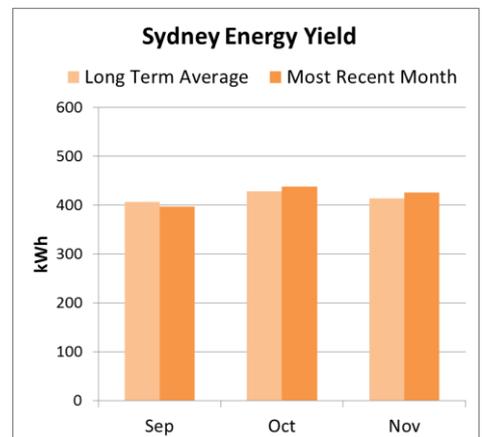


QA of Real-Time Weather Data



Recent data streams from Macquarie University (MQ) have indicated consistent close matching of Diffuse and Global irradiation measurements suggesting a continuously overcast but luminous sky or, more likely, that the shadow band on the Diffuse Radiometer (pictured) is out of adjustment. Accordingly, we are using an algorithm that calculates the Direct fraction (using ratios with the clear sky data for the same solar geometry) and assigns the Diffuse as the difference between the measured Global and the calculated Direct on the Horizontal. It is less accurate but satisfactory for our purposes in the interim.

The apparent problem began subtly during October and was not detected at that time. Rerunning the solar PV simulation for Sydney with the corrected data indicates an over-estimation of the electrical output last month of around 5%. This has been corrected in the graph at right.



Government-Provided Climate Data

A critique of the data appeared in [“Megnus”](#) Vol 35 No 8 in September and identified significant failings. Our report on the impact these might have on non-residential building applications has had to be held over to the next edition of **“Exemplary Advances”**.

ⁱ Exemplary publishes the [EWE](#) for three archetypical buildings and a residential solar PV system each month; applying the RTYs to [EnergyPlus](#) models developed using [DesignBuilder](#) for a 10-storey office, a 3-storey office and a single level supermarket as well as an [SAM](#) model of a typical 3 kW_{peak} solar PV system designed by [GSES](#). All values are % increase/decrease of energy demand/output relative to climatically typical weather. Especially during the mild seasons, large % changes can occur from small absolute differences.