Exemplary Advances

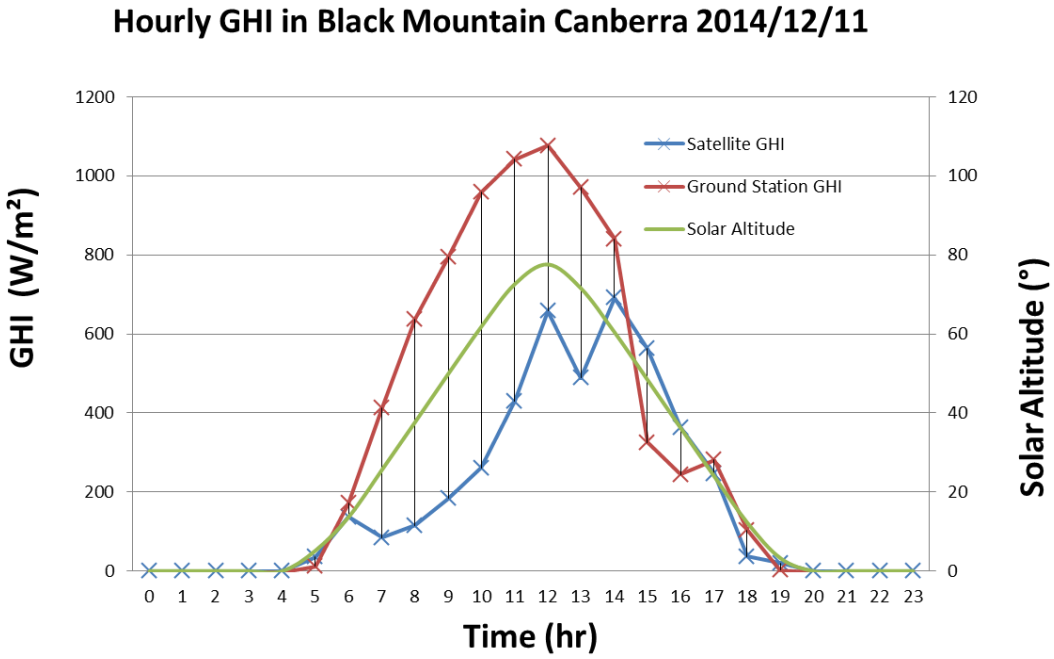
2015 June "**Exemplary Advances**" is the newsletter for Exemplary Energy Partners, Canberra. Feel free to forward it to friends and colleagues. Click here to subscribe or unsubscribe. Feedback is most welcome.

Past editions of "**Exemplary Advances**" are available on our website.

PV_OptiMizer – enhanced and available free

The latest version of our solar PhotoVoltaic (PV) evaluation app is now available for free. See the May edition for a list of the enhancements. The free download holds data for a tropical, an arid and a southern location. In-app purchases allow access to data for 100 locations and for editing the system components, making it a design tool for anywhere in Australia. Use the following links for your own free trial of the Android or iOS version now.

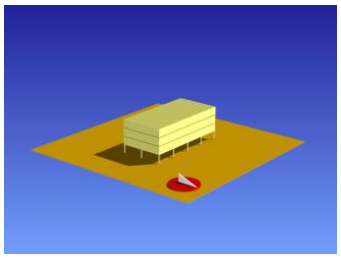
Real Time Solar and Coincident Weather Data – Presentation to ATA



On 27 May, the Canberra Branch of the Alternative Technology Association (ATA) was addressed by Craig Hanicek on successes and prospects for the regional development initiative he heads called South East Region Renewable Energy Excellence (SERREE) in the Capital Region. After a break for questions, Exemplary director, Trevor Lee, presented a seminar on the applications of real time solar and coincident weather data, focusing on the comparison between the CSIRO field measurement of solar irradiation and the coincident estimation of that weather element by the Bureau of Meteorology based on satellite-based cloud observations (see graph above). The ATA has published the full presentation for future reference.

Exemplary Weather and Energy (EWE) Index[i] - May 2015

Monthly tabulation and commentary relative to the climatic norm – the Reference Meteorological Years



2015 May	Canberra		Perth		Sydney	
	Heat	Cool	Heat	Cool	Heat	Cool
10-Storey	46%	-12%	59%	-8%	-90%	2%
3-Storey	42%	-11%	52%	-7%	-90%	4%
Supermarket	54%	13%	13%	-13%	-	111%
Solar PV	6.2%		9.4%		-8.7%	

Canberra's weather was cooler than the average in May. Although the mean maximum is higher by 2.1°C and the mean minimum is lower by 2.5°C, the mean average temperature is about the same. It was also slightly sunnier but a lot windier. The PV model had an energy yield over 6.2% higher due to more sun and almost 40% higher average wind speed. The PV panels work more efficiently at a lower temperature, so higher wind speeds and lower daytime air temperatures improve their output. Our two office buildings had 10% lower cooling consumptions and 40% higher heating. The 10-storey office heating consumptions in the West and North facing zones are over 30% and 50% higher, respectively, under this cold and windy weather despite the extra sun. Only the supermarket model had a higher cooling consumption. The cooling effect by the stronger wind is less significant due to a much lower window/wall-to-floor area ratio than the two office models, thereby reducing infiltration and transmission losses alike.

Perth had a cooler May, although the mean maximum and mean minimum temperatures are higher by 1.6°C, the mean average is lower by 0.6°C. It was sunnier and also a lot windier. Our PV model has an energy yield 9.4% higher due to 10% higher global radiation and 75% higher average wind speed. The 10-storey office heating consumptions in the Western and Northern zones are 58% and 103% higher respectively.

Sydney was warmer than average in May: mean maximum, minimum and average temperatures are all higher by 1.6°C, 3.6°C and 2.4°C respectively. As a result, the cooling consumption in the supermarket model had a two-fold increase. It was a lot windier as well. Our two office buildings also had cooling consumptions higher than the average, but only by 2%. As mentioned above, they were cooled down more effectively by the strong wind than was the supermarket model. The heating energies were 90% lower but the actual and climatically typical values are small. It was also cloudier. The PV model had an energy yield almost 9% lower due to less sun.

Home Energy Rating Optimizer – H.E.R.O. – beta version free trial

Exemplary's Home Energy Rating Optimizer – H.E.R.O. – is now available in a beta version for free trial. The software uses cloud computing to take a standard NatHERS House Energy Rating file (AccuRate, BERS Pro and FirstRate5) and re-run the simulations thousands of times to evaluate the potential for construction changes and modest design changes (like the size or shading of a window). Assessors or their clients can choose several or a myriad of changes from our extensive menu and receive a report overnight with those options ranked according to their thermal performance. They can be ranked in Star order for NatHERS states and territories and in separate heating and cooling load values (annual MJ/m²) to compare with the heating and cooling caps of the BASIX planning requirements. To claim your free trial of a single storey house, contact us for details.

[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.