



Exemplary Advances

2015 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.

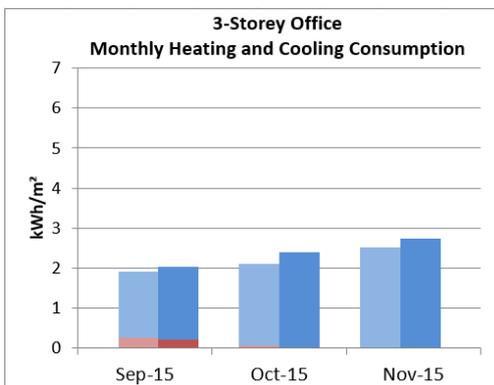
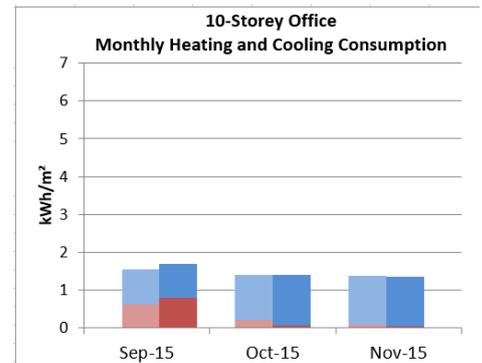
Past editions of “Exemplary Advances” are available on our [website](#).

Exemplary Weather and Energy (EWE) Indexⁱ - November 2015

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

2015 November	Canberra		Perth		Sydney	
	Heat	Cool	Heat	Cool	Heat	Cool
10-Storey	-	3%	-	8%	-	8%
3-Storey	-	7%	-	10%	-	13%
Supermarket	-91%	21%	-	12%	-	17%
Solar PV	-2.1%		10.5%		-2.3%	

Canberra was warmer, cloudier and less windy than the average in November. The mean maximum, minimum and average temperatures are higher by 4.1°C, 3.1°C and 2.0°C respectively. This weather is unfavourable to the solar PV panel efficiency and so the energy yield is 2.1% lower. The cooling consumptions of all our commercial building models are higher than the November averages by 3% to 7% for the office buildings, and 21% for the supermarket which has much longer trading hours. There is 91% less heating consumption in the supermarket, however both actual values are small. The cooling consumptions of the 10-storey office East and South perimeter zones are significantly higher, by around 30%. The other two perimeter zones are also higher, over 20%, due to the warmer air temperature but reduced solar load.



Perth had a warmer than average November. The mean maximum is less than 0.1°C higher while the average is higher by 0.8°C. However the mean minimum temperature is higher by 3.6°C. The cooling consumptions of all our commercial building models are higher than the November averages by 8% to 12%. The weather was also sunnier and windier, so the PV model had an energy yield 10.5% higher. The cooling consumptions of the 10-storey office North and West perimeter zones are 14.7% and 13.0% higher, respectively, due to solar and temperature loads. The South facing zone also has a cooling consumption higher by 13.1%.

Sydney has been warmer than average since May and the warm weather has continued through November. Although the mean maximum is lower by 1.3°C, the mean minimum and average temperatures are higher by 6.7°C and 1.5°C respectively. The PV model had an energy yield that was 2.3% lower than the October average due to the warmer and cloudier weather. The cooling consumptions of the 10-storey office North and West perimeter zones are over 17% and 21% higher respectively due to the warmer air temperature especially during office occupancy hours. Also, the supermarket model had a cooling consumption 70% greater than the average.

Seasons Greetings – and a small gift

All of us at Exemplary Energy send you our Seasons Greetings.

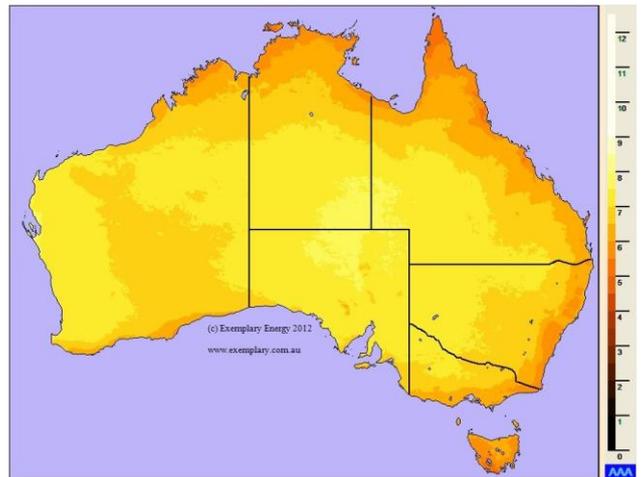
And a small gift: for the first 20 readers to [contact us](#), we will send a complimentary copy of the Bureau of Meteorology's 2016 [Australian Weather Calendar](#). Be sure to tell us which you prefer: the traditional large format (420 x 594 mm), which features landscape photographs about A3 size; or the smaller format (220 x 310 mm), with photographs about A4 size.

We will finish the year at lunchtime on 23 December and re-open on Monday 4 January 2016 to begin a **Happy New Year!**

Solar Engineering Tables now based on $\frac{1}{4}$ Century of Hourly Data

The publication of solar irradiation data estimated by the Bureau of Meteorology (BOM), based on its steadily improving algorithms for inferring it from the cloud cover observed by a series of geostationary satellites, began in the 1980s.

In recent years, this work was refined from the original daily Global Horizontal Irradiation ([GHI](#)) data to be published as Gridded hourly data for both GHI and the much harder to estimate Direct Normal Irradiation (DNI). Data is now published for almost 270,000 Australian locations starting from 1 January 1990 so that the data base covered a quarter century (25 years)



at the end of 2014. The BOM publishes this data about three months in arrears but Exemplary has now completed the recalculation of the Australian Solar Radiation Data [Handbook](#) and the associated software for its core sites and these will be available for purchase from Exemplary or [ACADS-BSG](#) early in the new year.

Prior purchasers of the Handbook or Software are entitled to a 25% discount on the new edition.

Mandatory Home Energy Rating in the ACT for 200 Months

Mandatory [rating](#) and disclosure of the energy efficiency of existing homes at the time of sale has been [law](#) in the ACT since April 1999 and we have tracked the \$/star value correlation since then.

Home Energy Rating OptiMizer – HERO - available for free trial

The service is now available for AccuRate and BERS Pro files with a version to handle FirstRate5 files under advanced development. [Contact us](#) for your free trial.

Asia Pacific Solar Research Conference, Brisbane

Exemplary Energy presented two papers at the Asia Pacific Solar Research [Conference](#) held in Brisbane 8-10 December 2015. Due to the ill-health of Exemplary Director, **Trevor Lee**, both papers were presented as posters by **Will Logie**, former Exemplary intern and now PhD scholar in ANU's [Solar Thermal Group](#). The posters can be viewed here:

- [1. Weather Affects Building and PV Performance - Simulation v Monitoring](#); and
- [2. Comparison of Satellite Estimated Hourly Solar Data with Coincident Ground Based Measurements and their Applications in Industry and Commerce](#) co-authored by Exemplary intern **Fangwei Ding**.

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.