



# Exemplary Advances

**2015 July** "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](#).

## Draft BCA 2016 – Revival of the discredited JV2?

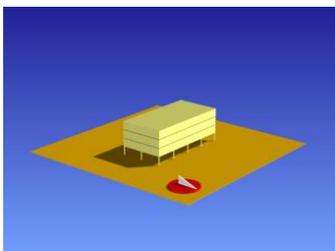
The published [draft BCA 2016](#) proposes the revival of the discredited JV2 path to verifying compliance within Section J – Energy Efficiency provisions in Volume 1 of the National Construction Code. Included in the first edition of Section J in 2006, the setting of fixed energy targets for simulated performance of non-residential buildings was found to be too easy to game and unreliable anyway even where good will prevails on the part of the simulation team. Hence it was deleted from the next version in favour of JV3 where the simulation team set their target by simulating a Reference Building which is generally similar to the one proposed except that it precisely complies with JV1 – meeting the Deemed to Satisfy standards. Comment from industry closes on 3 August 2015. See the critique lodged by Exemplary Energy.

## New Weather Station for Melbourne

Melbourne has a new location for weather observations, located at Olympic Park in the heart of Melbourne’s sporting precinct. The new automatic weather station (AWS) provides readings of air temperature, wind speed and direction, air pressure, rainfall and relative humidity. Half-hourly readings from the station are available on the Bureau’s website. According to the Bureau of Meteorology, the new site gives weather observations which are more representative of the Melbourne city area and also gives sporting clubs and authorities using the venues location specific weather observations to help manage their events.

## Exemplary Weather and Energy (EWE) Index<sup>i</sup> - June 2015

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



2015 June	Canberra		Perth		Sydney	
	Heat	Cool	Heat	Cool	Heat	Cool
<b>10-Storey</b>	25%	9%	-29%	14%	-81%	21%
<b>3-Storey</b>	32%	9%	-28%	18%	-81%	27%
<b>Supermarket</b>	26%	-37%	-39%	141%	-100%	1018%
<b>Solar PV</b>	6.1%		7.5%		6.8%	

Canberra’s weather was cooler than the average in June. The mean maximum temperature is lower by 3.0°C and the mean average is lower by 1.2°C. It was also sunnier: the PV model had an energy yield of 6.1% higher than average. Our two office buildings had 25%-32% higher heating consumptions due to the cold weather. The 10-storey office heating consumptions in the West and

North facing zones are about 30% and 35% higher, respectively. Only the supermarket model had a lower cooling consumption; however, the current and average values are both very small.

**Perth** had a warmer and sunnier than average June. The PV model had an energy yield of over 7.5% higher. Although the mean maximum is lower by 0.3°C, the average temperature is 1.7°C higher. Our office models have 14%-18% higher cooling energy consumptions. The 10-storey office cooling consumptions in the West and North facing zones are over 17% and 30% higher, respectively, in part due to the extra solar gain. It was windier as well. However, the cooling effect of the stronger wind was insignificant to the supermarket model due to a lower window/wall-to-floor ratio than the office models. The cooling consumption is over 140% higher than average but both values are quite small.

**Sydney** was warmer than average in June. The mean maximum, minimum and average are higher by 2.7°C, 4.9°C and 3.4°C respectively. It was sunnier as well: the PV model had an energy yield of 6.8% higher. Both office buildings had cooling consumptions higher and heating lower than average. The cooling consumptions in the 10-storey office West and North facing zones are about 18% and 22% higher respectively. The supermarket model had cooling consumption of over 10-fold higher due to the longer business hours and the higher-than-average air temperature especially after sunset.

## Weather Affects Building Performance - Simulation vs Monitoring

Exemplary Director, **Trevor Lee**, will present on the building optimisation uses of Real Time Year (RTY) data at an [IBPSA](#) seminar in Sydney on 14 July: [Energy Modelling in the Real World](#).

Real Time Year (RTY) data sets to the end of June 2015 are now available for CBR, PER and SYD. Click [here](#) for details. Superseded RTYs are available at a discount of 10% per month past publication date, with up to a 50% total discount available (20% per month past publication date for student, academic and other non-commercial use). So please [enquire](#) about formats and delivery times.

## New Gas and Electricity Prices from 1 July 2015

For the Canberra region, the residential gas price that took effect on 1 July 2015 has increased by 4.9% to 2.8028<sup>ii</sup> cents/MJ. At the same time, the electricity price has dropped by 5.6% to 18.304<sup>iii</sup> cents/kWh largely as a result of the repeal of the price on carbon. Canberra homes are exposed to a cold, heating dominated, climate, so, although there is a price drop for electricity, the cost for gas heating, which is about 70%-80% of the total space conditioning energy cost, has increased and so the overall annual energy cost has increased slightly.

Using our 200 m<sup>2</sup> single storey house model as an example, a dwelling with lower energy efficiency star rating that is fitted with a less efficient gas furnace and air conditioner, the total annual energy cost could increase by about 1.3%. Using more efficient heating and cooling appliances, the overall increase in cost is less than 0.7%. Our [published matrix](#) of performance and annual running costs, including the insulation quality of the ductwork, has been updated accordingly for immediate use without charge.

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<sup>i</sup> 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<sub>peak</sub> 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.

<sup>ii</sup> Gas price is obtained from the ActewAGL website for the ACT residential standard rate '[Home Plan](#)' which applied from 1 July 2015, as viewed on 2015-07-13.

<sup>iii</sup> Electricity price is obtained from the ActewAGL website for the ACT residential standard rate '[Home Plan](#)' which applied from 1 July 2015, as viewed on 2015-07-13.