



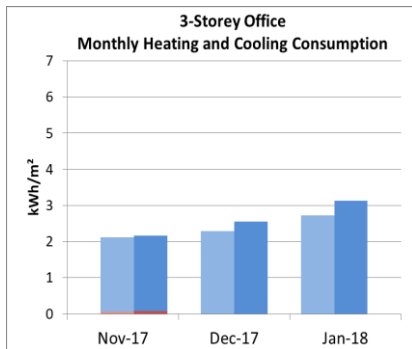
Exemplary Advances

2018 February “*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 - January 2018

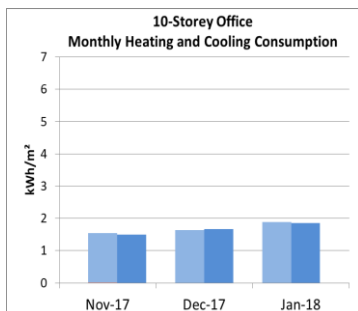
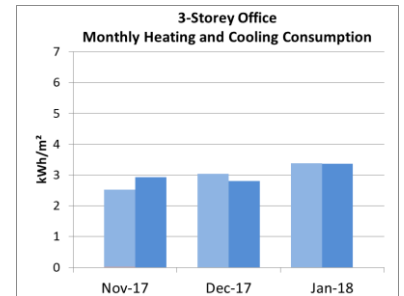
Monthly tabulation and commentary relative to the climatic norm – the Reference Meteorological Years

2018 January	Canberra		Perth		Sydney	
	Heat	Cool	Heat	Cool	Heat	Cool
10-Storey	N.A.	13%	N.A.	-1%	N.A.	-2%
3-Storey	N.A.	14%	N.A.	0%	N.A.	-2%
Supermarket	N.A.	27%	N.A.	4%	N.A.	-4%
Solar PV	-6.2%		-3.8%		9.8%	



Canberra had warmer than average weather in January. The mean maximum and average temperatures were higher by 1.5°C and 1.8°C respectively. Only the mean minimum was lower by 1.4°C. All the commercial building models had higher than average cooling consumptions. The 10-storey office South facing zones had 19.7% more cooling than the norm due primarily to the higher air temperatures. The cooling consumption in the North, East and West facing zones were also higher than the average by around 12%–19%. It was cloudier than the average and hence the solar PV energy yield was 6.2% lower.

Perth had an average weather in January in terms of air temperature. The mean minimum and average were lower by 0.1°C and 0.7°C respectively, only the mean maximum temperature was higher by 0.1°C. The 10-storey office North and West facing zone had cooling consumption less than the average by less than 1%. South facing zone also had around 1% less cooling consumption. It was cloudier than the average and hence the solar PV energy yield was 3.8% lower.



Sydney had a slightly cooler than average weather in January. The mean maximum, minimum and average were lower by 0.1°C, 0.5°C and 1.2°C. It was sunnier than the average. The solar panel efficiency was benefited by this weather and hence the energy yield was 9.8% higher. The cooling consumptions of our commercial building models were all less than the average. The cooling consumption of the 10-storey office North and East facing zones was less than the average by around 4%-6%. Cooling consumption of the southern zones was also less than the average by around 7% in this weather.

The North and East facing zones of our 10-storey office model had consumed around 9% less cooling energy than the average. The South facing zone also had around 10% less cooling consumption due to the cooler air temperature. The PV array had an energy yield that was 7.8% less in this weather.

Vanadium dioxide coating opens door to smart windows



PhD student Mohammad Taha shows off the ultra-thin coating developed at RMIT.

Researchers from Melbourne's RMIT University have developed a new ultra-thin coating that responds to heat and cold for applications in “smart windows”. The self-modifying coating, which is a thousand times thinner than a human hair, works by automatically letting in solar heat when it’s cold and blocking the sun’s infrared rays when it’s hot.

Smart windows have the ability to naturally regulate temperatures inside a building, leading to major environmental benefits and significant financial savings. Lead investigator Associate Professor [Madhu Bhaskaran](#) said the breakthrough will help meet future energy needs and create temperature-responsive buildings. The coating is 50-150 nanometres in thickness and at 67°C, vanadium dioxide transforms from being an insulator into a metal, allowing the coating to turn into a versatile optoelectronic material controlled by and sensitive to light.

The coating stays transparent and clear to the human eye but goes opaque to infra-red solar radiation, which humans cannot see and causes much of the sun-induced heating of buildings. Read more [here](#).



Mandatory Home Energy Rating in the ACT for 226 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. Recently, we have disaggregated the data by housing type and will be publishing those results soon.

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.

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.