



Exemplary Advances

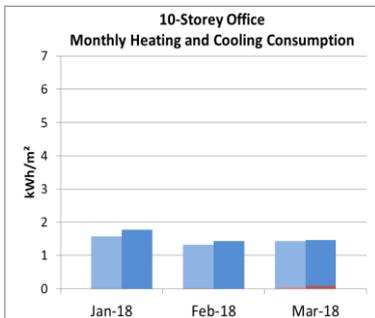
2018 April "Exemplary Advances" is the newsletter for Exemplary Energy Partners, Canberra. Feel free to forward it to friends and colleagues. Click here to [subscribe](#) or [unsubscribe](#). Feedback is most welcome.

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

Exemplary Weather and Energy (EWE) Indexⁱ - March 2018

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

2018 March	Canberra		Perth		Sydney	
	Heat	Cool	Heat	Cool	Heat	Cool
10-Storey	N.A.	0.2%	N.A.	-4%	N.A.	-20%
3-Storey	N.A.	0.1%	N.A.	-2%	N.A.	-22%
Supermarket	N.A.	12%	N.A.	0.2%	N.A.	-12%
Solar PV	5.6%		-5.9%		5.9%	

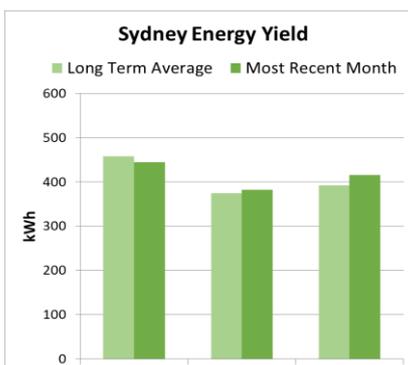
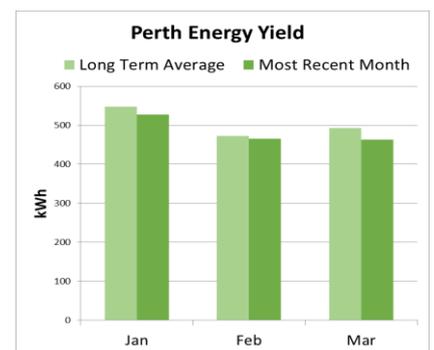


Canberra had slightly warmer than average weather in March. The mean maximum and average temperatures were higher by 1.3°C and 0.7°C respectively (mean minimum temperature was the same). All the commercial building models had cooling consumptions marginally higher than the averages by 0.1%-0.2%, except the Supermarket had 12% higher cooling due to its longer operating hours.

The 10-storey office South, East and West-facing zones had less than 1% more cooling than the norm. Only the North-facing zones used 2% more cooling energy as it was warmer and sunnier. The solar PV array energy yield was 5.6% higher.

Perth had cooler than average weather in March. The mean maximum, minimum and average temperatures were lower by 1.4°C, 2.7°C and 0.7°C respectively. All the commercial building models had cooling consumptions slightly lower than the average, except a 0.2% increase in Supermarket cooling due to the warmer air temperature after sunset.

The 10-storey office South-facing zone had cooling consumption less than the average by 7.4% due to the lower air temperature. The West-facing zone also had around 6% less cooling consumption. It was cloudier as well. The PV panel energy yield was lower by 5.9%.



Sydney had substantially cooler and sunnier than average weather in March. The mean maximum temperature was lower by 3.2°C, and both mean minimum and average temperatures were lower by 2.0°C. It was sunnier as well hence the PV energy yield was 5.9% higher.

The cooling consumption of the 10-storey office South-facing zone was 32% less than the norm due primarily to the lower air temperatures. The other 3 zones also had cooling consumption around 25%-33% less. The PV panel efficiency was benefited from this weather and hence the energy yield was 5.9% higher.

Renewables go Gigascale – report from UniSyd’s Warren Centre

Saudi Arabia and [SoftBank](#) have agreed to build a US\$200B solar power development of 200 GW by 2030 - 100 times larger than any other previous global project in 2017. The UN reported that 157 GW of solar power was installed globally, and 98 GW was based in China. Head of [UN Environment Erik Solheim](#) stated, “*We are at a turning point ... from fossil fuels to the renewable world.*”

Locally, NSW’s largest wind farm was approved this month by the state and will bring cleaner energy, 800 jobs and lower energy prices. The \$640 million Liverpool Range Wind Farm with its 272 turbines supplied by renewable energy company [Epuron](#) will power up to half a million homes. In SA, an 8 MW “Virtual Power Plant” pilot project will come on line in 2019 to demonstrate how to “orchestrate” rooftop solar power and battery storage for about 1200 homes in Adelaide. [ARENA](#) is providing about 1/3 of the funding for the \$23 million project by SA’s Simply Energy that will deploy [Tesla](#) batteries and an innovative distributed energy exchange or “deX” platform by [Greensync](#).

Pumped Hydro Electric Energy Storage

The Australian National University ([ANU](#)) has completed an audit of 22,000 potential sites across Australia for pumped hydro energy storage, which can be used to support a secure and cheap national electricity grid with 100 per cent renewable energy. The zero-emissions grid would mainly rely on wind and solar photovoltaic (PV) technology, with support from pumped hydro storage, and would eliminate Australia's need for coal and gas-fired power.

Lead researcher [Professor Andrew Blakers](#) said the short-term off-river pumped hydro energy storage (STORES) sites combined had a potential storage capacity of 67,000 Gigawatt-hours (GWh) – much more than the capacity required for a zero-emissions grid. “*Australia needs only a tiny fraction of these sites for pumped hydro storage – about 450 GWh of storage – to support a [100 per cent renewable electricity system](#),*” said Professor Blakers from the ANU Research School of Engineering. “*Fast tracking the development of a few of the best sites by 2022 could balance the grid when Liddell and other coal power stations close.*”

[Exemplary Investments Pty Ltd](#) has begun a research process in liaison with other impact investors to locate the most prospective sites for feasibility study.

Mandatory Home Energy Rating in the ACT for 228 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.

IBPSA Forum on Weather Data: Past, Present, and Future

On 24 April 2018 the International Building Performance Simulation Association, [IBPSA Australasia](#), hosted a forum in Sydney focused on weather and climate data files for changed future climates presented by three speakers:.

- *Studying Climate Change Impacts on Buildings Using Future Weather* (Dr. Lisa Guan, [UTS](#))
- *Methods of Generating Future Weather Files* (Benjamin Brannon, [Arup](#))
- *The Making of Ersatz Future Meteorological Years: a collaboration with the [CSIRO Oceans and Atmosphere Flagship](#)* (Trevor Lee, [Exemplary Energy](#))

The presentations will be uploaded in the near future by IBPSA Australasia.

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.