



Exemplary Advances

2019 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 2019

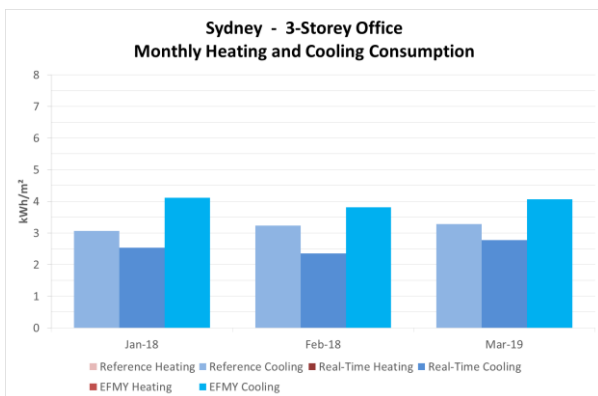
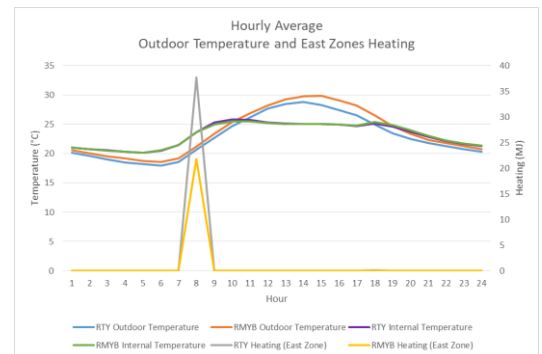
Monthly tabulation and commentary relative to the climatic norm – the Reference Meteorological Years

2019 March	Canberra		Perth		Sydney	
	Heat	Cool	Heat	Cool	Heat	Cool
10-Storey	-	-	N.A.	-5%	N.A.	-14%
3-Storey	-	-	N.A.	-4%	N.A.	-16%
Supermarket	-	-	N.A.	2%	N.A.	2%
Solar PV	-		0.2%		-14%	

The Exemplary Real Time Year weather files ([RTYs](#)) used for these monthly simulations are available for [purchase](#) to allow clients to simulate their own designs for energy budgeting and monitoring rather than rely on analogy with the performance of these [archetypical](#) buildings and systems.

Canberra – No data for March due to a now-corrected failure at the CSIRO weather station.

Perth had cooler than average weather in March. The mean average, maximum and minimum temperatures were lower by 0.8°C, 0.7°C and 1.4°C respectively. The two office building models had cooling consumptions lower than the norm due to the cooler air temperatures. Only the supermarket model had a slightly higher cooling consumption due to cooler air temperature during the early morning before the start of the office work hour. The cooling consumption of the 10-Storey office South facing zone was over 9.5% lower than the norm. The West facing zones also had cooling consumption close to 9% lower due to the cooler afternoon. Overall it was just slightly sunnier than the average, therefore, the solar PV array had an energy yield of 0.2% higher.



Sydney had cooler than average weather in March. The mean average, maximum and minimum temperatures were all lower than the averages by 0.8°C, 3.4°C and 0.9°C respectively. It was also cloudier. The cooling consumption of the two office building models were lower than the norm by 14%-16%. Only the supermarket mode had higher cooling consumption due to the slightly warmer temperature at night. The cooling consumption of the 10-storey office South facing zone was close to 24% less than the norm due primarily to the lower air temperatures. The East facing

zone had over 37% lower cooling consumption due to the cooler and cloudier morning. The other 2 zones also had cooling consumption around 20% less. The solar PV array had an energy yield of 14% lower under this cloudy weather.

Climate files updated to include 3 extra years

Exemplary's weather data files and the climate data files based upon them have been updated from the 25 years to 2014 to now incorporate 28 years from 1990 to 2017. These are now available for purchase through [ACADS-BSG](#) with no increase in [price](#). These include the full 28 year weather record, the Reference Meteorological Years (RMYs) A, B and C and the extreme years P10 (12 calendar months each chosen as having marginally less solar radiation than 90% of years) and P90 (12 calendar months each chosen as having marginally more solar radiation than 90% of years). These are all available in ACDB, TMY2 and EPW formats.

The three RMYs are selected with varying [weighting](#) given to the various weather elements. RMY-A is selected with a 10/20 weighting for solar radiation. RMY-B has a 5/15 solar weighting while RMY-C has a 2/12 solar weighting.

Key Site Comparisons – 1990-2014 with 1990-2017

Exemplary Energy Partners published its **Melbourne** comparison in our **March** edition. We will publish equivalent comparisons for the other seven capital cities and Alice Springs to represent arid Australia and Thredbo or Cabramurra to represent alpine Australia in future editions of *“Exemplary Advances”*.

Renewable Energy Summer School for New Intern – by Nathan Robertson



As part of The Green Program ([TGP](#)), I recently undertook a short course in Iceland which was run in partnership with Reykjavík University. TGP is an organisation based in the US that organises adventurous but educational courses overseas for university students with an interest in sustainability. One of a few different programs, the Iceland course offered lectures regarding Iceland's energy resources, the basics of hydro-power, geothermal energy, energy economics, biofuel innovations and the chance to explore many power plants. Between these lessons and working on a Capstone Project in groups, we had the pleasure of experiencing the natural beauty of Iceland through numerous excursions to the countryside.

This included hiking a glacier, visiting the Blue Lagoon (which is actually a beautiful yet man-made industrial biproduct), seeing many waterfalls and 'super-jeeping' over rivers, snow and long black-sand beaches. Despite being the only student of 28 not from the US, I made what I hope will become life-long friends and had a fantastic time. I also feel that my study and career aspirations for working in the renewables industry have benefited from the program. I would highly recommend TGP to any undergraduate or post-graduate student with an interest in sustainability and a thirst for adventure.

Caption: Nathan (rear, second from right) atop a glacier with 8 of his new US friends

Securing a 21st Century Energy Grid

The evolution of the energy and electrical sector in Australia is being significantly boosted with major developments, particularly in the rollout of new technology to more traditional infrastructure. Find out [more](#) on Standards Australia's website.

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. RTYs are available for purchase for your own simulations.