Exemplary Advances

2018 September ***"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.

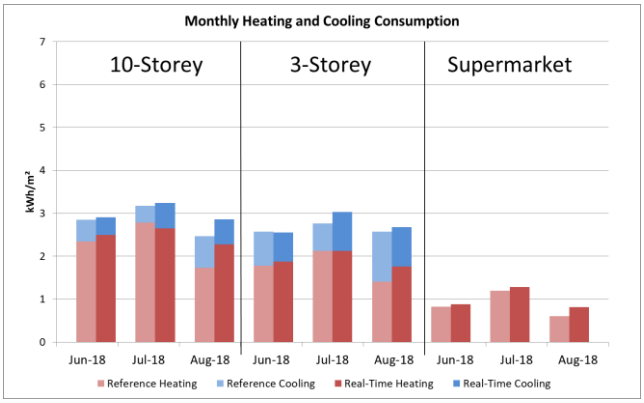
Past editions of ***"Exemplary Advances"*** are available on our website.

Exemplary Weather and Energy (EWE) Index[i] - August 2018

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

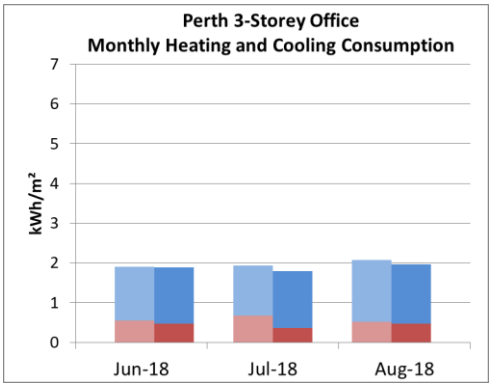
2018 August	Canberra		Perth		Sydney	
	Heat	Cool	Heat	Cool	Heat	Cool
10-Storey	31%	-22%	-7%	-8%	-	-
3-Storey	25%	-21%	-8%	-4%	-	-
Supermarket	33%	N.A.	-20%	N.A.	-	-
Solar PV	1.9%		-6.8%			

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 had cooler than average weather in August. Although the mean minimum was 1.1°C higher, the mean maximum and average temperature were lower by 3.5°C and 1.3°C respectively. All the commercial building models had heating consumptions higher than the averages and lower consumption in cooling. The 10-storey office East facing zones had a heating consumption higher than the climatic averages by over 50% despite the warmer air temperatures during the night and in the morning. It was slightly cloudier as well, however the cooler air temperature is beneficial to the solar PV array efficiency and thus the energy yield was 1.9% higher.

Perth had warmer than average weather in August. The mean maximum and mean daily average temperatures were higher by 3.0°C and 0.1°C respectively. Only the mean minimum was lower than the climatic norm, by 0.2°C. All the commercial building models had heating consumptions lower than the norm. It was cloudier as well, therefore, the cooling consumptions were also lower. The 10-storey office South facing zones had heating consumptions less than the averages by 9.6% due primarily to the warmer air temperatures. East facing zones had heating consumptions over 77% higher due to the cooler air temperatures and cloudier weather in the mornings. The solar PV array had a lower efficiency in this warmer weather in addition to the greater cloudiness and thus the energy yield was 6.8% lower.



Sydney – no data available. See vale Dr Grant Edwards.

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International Conference on Energy and Meteorology

The World Energy and Meteorology Council (WEMC) and the Technical University of Denmark (DTU) have announced that the 6th International Conference Energy and Meteorology (ICEM 2019) will take place in Copenhagen, Denmark, on 25-27 June 2019, with the pre-conference seminar on Monday 24 June. The abstract submission deadline is 25 January 2019. WEMC, School of Environmental Sciences, University of East Anglia, Norwich, United Kingdom.

Vale Dr Grant Edwards

Dr. Grant C Edwards, P.Eng., was a Senior Lecturer in Macquarie University's Faculty of Science and Engineering in its Department of Environmental Sciences. With a focus on pollution dispersal studies, he and his team established and maintained the university's Automatic Weather Station (AWS) in the sports area of their Ryde campus. In addition, he arranged several undergraduate interns to serve in Exemplary Energy applying their skills to the uses that the building and construction industries can make of that data and we greatly benefited from that interaction with academia in our work.

In August the MQ AWS went off line due to a datalogger failure and in September Dr Edwards died suddenly of a heart attack. Accordingly, the Sydney data is unavailable this month. We will seek to make arrangements with his successors and/or other weather data sources. Meanwhile, for examples of papers prepared jointly by Dr Edwards and Exemplary's Trevor Lee on real time solar and coincident weather data see here and here. Dr Edwards will be sorely missed and we accordingly offer our condolences to his friends, colleagues and family.

To look forward, look back:
Australia's first grid-connected rooftop solar system

Peter Fries writes:
In 1994 – 24 years ago – the first residential solar system was connected to an Australian power grid.

Solar One, as it was called, used a 1.4 kW rooftop array to power my home at Mt Coolum, Queensland, exporting excess electricity into the SEQEB (now Energex) grid. By any comparison to today's systems, Solar One was a humble effort. But it was backed by the SEQEB head of Research, Tony Burke, and a PhD student, Grayden Johnson, along with the ANZ Solar Energy Society and a number of private companies and individuals.

Two years of data from a flawless operation of the system allowed engineers to design the first grid-connection standard, which also won Grayden his PhD. Read more.

[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.