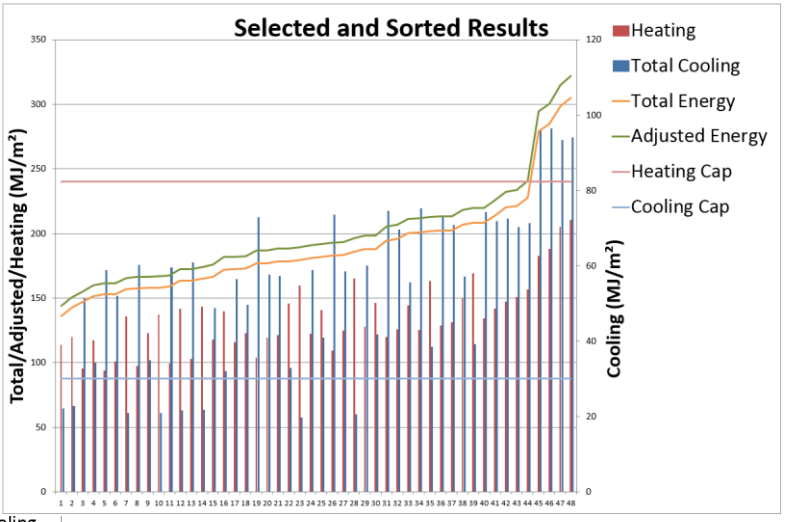
# Exemplary Advances

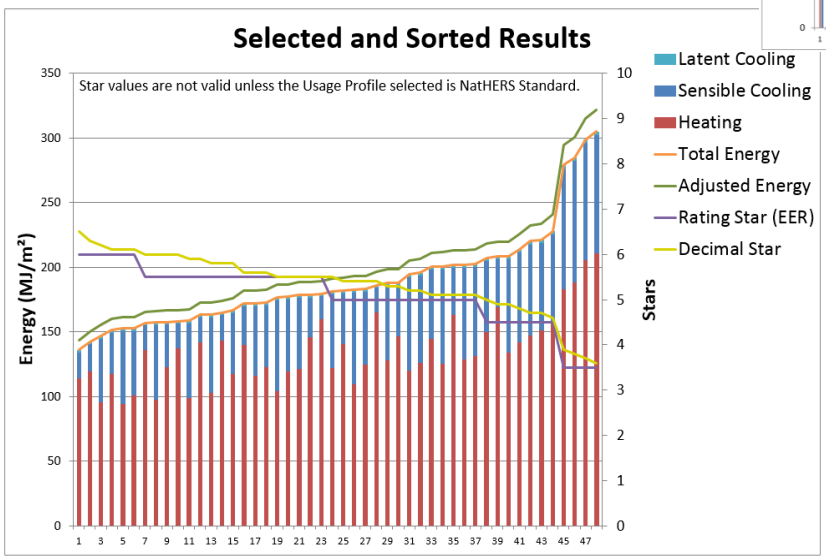
2015 September **"Exemplary Advances"** is the newsletter for Exemplary Energy Partners, Canberra. Feel free to forward it to friends and colleagues. Click here to subscribe or unsubscribe. Feedback is most welcome.

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

## Home Energy Rating OptiMizer – HERO available for free trial

The Home Energy Rating OptiMizer – HERO – is now available in beta release for free trial by accredited energy assessors anywhere in Australia. The service analyses for NatHERS (BCA 6 stars, below) and BASIX (heating and cooling caps for Thermal Comfort, right) at the user's discretion. The assessor nominates a series of alternative constructions and modest design changes from our menu and our "batch processor" simulates the design with all possible combinations of those alternatives




and sorts the results in order of performance merit. The client can then interrogate the results in graphical format (view a sample here) to identify the most cost effective complying combination or the best performing solution within the client's budget.

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.

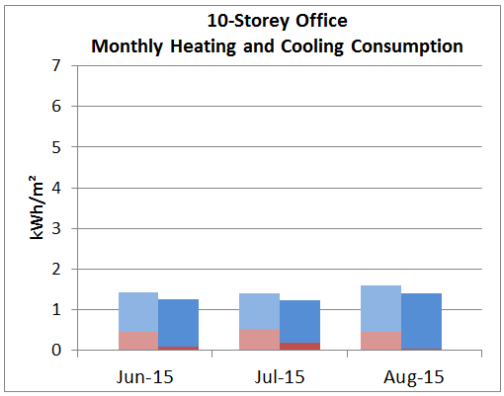
## Exemplary Weather and Energy (EWE) Index[i] - August 2015

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

| 2015 August | Canberra | | Perth | | Sydney | |
|---|---|---|---|---|---|---|
| | Heat | Cool | Heat | Cool | Heat | Cool |
| 10-Storey | 34% | -17% | -15% | 0% | -91% | 20% |
| 3-Storey | 32% | -17% | -17% | 3% | -91% | 30% |
| Supermarket | 54% | -47% | -40% | 149% | -100% | 404% |
| Solar PV | -3.9% | | 1.6% | | -3.7% | |

**Canberra** was cooler and cloudier than the average in August. The mean maximum and average temperatures are each lower by 1.3°C, and the mean minimum temperature is 1.1°C lower. The PV model had an energy yield that was 3.9% lower than the August average. All our commercial building models had heating consumptions higher than the August average due to the colder and cloudier weather. The 10-storey office heating consumptions in the East, North and West facing perimeter zones are about 70%, 41% and 25% higher respectively.

**Perth** had a warmer and slightly cloudier than average August. The mean maximum and average temperatures are higher by 1.2°C and 1.3°C respectively. Only the mean minimum temperature is lower by a negligible 0.1°C. The heating consumptions of our three commercial building models are all lower than the August average. Despite the slightly cloudier weather, the PV model had an energy yield of 1.6% higher, mostly due to the windier weather which improves the PV panel efficiency. The supermarket model had heating energy consumption 40% lower and cooling consumption almost 150% higher, however both the absolute values are small, exaggerating relative differences.




**Sydney** has been warmer and cloudier than average since May and the warm weather has continued through August. The mean maximum, minimum and average temperatures are higher by 2.8°C, 4.1°C and 3.7°C respectively. The PV model had an energy yield that was 3.7% lower than the August average due to this warmer and cloudier weather. The cooling consumptions of the 10-storey office North and West perimeter zones are over 40% and 50% higher respectively and over 100% higher in the East facing perimeter zones due to the warmer morning air temperature. The supermarket model had a cooling consumption over 5 times greater than the average due to its longer business hours relative to the offices and its exposure to the substantially higher than average air temperatures after sunset and in the early morning; and the usually modest heating demand was completely eliminated.

## Sydney Solar Data Issues

Technical issues are still plaguing the Macquarie University weather station and its data collection and dissemination. We are again indebted to the co-operative folk at UNSW and UTS for their contribution to span this break in our data flow. Their solar radiation data is of particular value to us because there are very few sites at which this weather element is reliably measured.

## Real Time Weather Data for Melbourne

The Bureau of Meteorology has operated a high quality weather station at Tullamarine Airport for many years. That station includes detailed solar radiation measurement which is ideal for the timely creation of Real Time Year (RTY) weather files for building and renewable energy system operational monitoring – as we do with our Exemplary Weather and Energy Index (EWEI above). Sadly, though, the Bureau's rigorous quality assurance (QA) delays the release of this data until it is only of use in historical studies. However, in response to industry expressed demand, the Bureau is now considering a parallel early release of the data on a *caveat emptor* basis and this would allow us to extend our EWE Index service and building-specific simulation services to Australia's second largest city. We will keep you informed of developments.

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[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.