



Harcourt Business Park
Unit 16, 809 - 821 Botany Road
Rosebery NSW Australia 2018
(entrance off Harcourt Parade)

T: +61 (2) 8335 3333
F: +61 (2) 8335 3300
E: info@gridxpower.com

Dr John Tamblyn
Chairman
Australian Energy Market Commission
Level 16
1 Margaret Street
Sydney NSW 2000

1st February 2007

Dear Chairman,

RE: Rule Change Proposal – Demand Management and Transmission Networks

GridX would like to register its strong support for the proposed rule changes and as a key developer in the demand side market to assure the AEMC that there is great validity in the assertions made by the TEC in terms of both cultural and regulated bias toward supply side solutions over demand side solutions.

Naturally this means that the energy “market” is made far less efficient than economists would consider essential and the industry is now witnessing huge levels of clearly inefficient investments in terms of supplying peak summer loads driven by the impacts of highly affordable household refrigerated air conditioning systems – a trend that is set to intensify in coming years and force up the price of electricity to all consumers and cause deadweight loss to the economy.

GridX wish to present here for the first time evidence of the potential impact demand side investments can make on electricity supply investments and the provision of highly reliable and secure energy services **using real data from an actual operating project that has received multiple awards for its level of innovation and its potential impact on greenhouse gas emissions in this country.**

This project is a housing estate in western Sydney that is supplied electricity from a gas fired generator, and hot and chilled water from the waste heat of the generator for water heating, space cooling and heating – a process termed tri-generation.

It is a highly efficient delivery system using readily available technologies with intelligent control systems and appropriate appliances. It also has the benefit of a much lower greenhouse signature than the traditional supply chain and in our view is a system of energy service delivery that is far more appropriate and economically efficient given the major changes in the service requirements of consumers as air conditioning penetration and loading increases daily.

The data presented in below appendix on the project demonstrates for example that there is **very little if any discernable temperature correlation with electricity use** as the key energy loads that track with temperature (heating, cooling and to some extent hot water) are supplied by the generators waste heat.

This in effect displaces the electricity required for these loads at a much higher efficiency and lower greenhouse signature. Rather than draw on power from coal fired generators at very low efficiencies that has to be hauled long distances with the incumbent losses over transmission and distribution networks (delivered energy can be as low as 20% of the initial fired energy with 80% of the energy in the coal simply going to waste, heating up the environment and producing unnecessary greenhouse emissions) the service is embedded next to the end use and uses this lost energy (waste heat) highly effectively.

Peak electricity demand is some 25 to 30% of equivalent electricity reticulation demand design requirements of new estates in the same areas as the project, indicating the potential capital savings available in network developments. In most cases these projects can also see the estate brought to market 3 to 5 years earlier than via network augmentation and extensions (which typically require more planning and development time) and at a much lower cost to developers and typically providing discounts to customers as well. Some areas we understand in parts of Sydney have even been barred from installing air conditioning until systems?

The GridX projects are subject under retail licence to only receive the regulated retail tariff rates so customers are price protected and in most cases this regulated “cap” provides a project that meets private sector hurdle rates.

We do stress that this system is not always the answer as it relies on gas supply being available at reasonable retail rates (or rates that trend at least with regulated retail tariffs) but the economics are generally very compelling and it also allows the house or premises involved (as it is applicable to commercial and light industrial estates as well) to meet new stringent greenhouse emission ratings.

The system has been highly awarded as we stated winning for example the prestigious 2007 Banksia Climate Award as well as others including the HIA 2007 GreenSmart Awards for Smart Housing and for Best Product, the Urban Development Institute of Australia 2007 Presidents and Sustainability Awards and the Australian Institute of Energy Excellence Award for 2007.

Unfortunately though the regulatory processes and barriers have been a daunting process to try and overcome with serious delays and application in our view of heavy handed responses (rather than light handed). For some in the industry it is clearly seen as a potential threat – that it could displace traditional network construction and development for example. For others they see its real potential and groups like Integral Energy for example have showed their support with some enthusiasm (see below).

The key surprise though has been that some Jurisdictional Economic Regulators when confronted with real demand side optionality have demonstrated a clear supply side bias and/or an unwillingness to give the investment the leeway to develop, and as the TEC points out this bias is embedded in the Rules so maybe it is no such surprise.

To our mind there is a need for economic leadership from the AEMC. To some extent GridX has seen this from the AER for example but it is extremely difficult to understand why in the formation of the Rules this bias was not addressed and that this Rule Change request has even needed to be promulgated?

The ramifications of the data presented below is in our view fundamental to the consideration of this rule change, and supports key assertions by the TEC in terms of the role the demand side can play in the market. If we are to address major energy service changes then we need to allow innovative developments on the demand side (and new

systems of energy service delivery) that have economically efficient outcomes to have access to the market, to not encounter undue regulatory and cultural bias and to be recognised as legitimate players in market formation.

Best Regards,

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke at the end.

Craig Chambers
Chief Operating Officer

Appendix: The Glenfield Project

The Vision Estate at Glenfield in Western Sydney (within the Integral Energy network area) is Australia's first housing estate that generates three forms of energy from one source. The "tri-generation" system uses natural gas to produce electricity, heating and chilled water distributed underground to the houses for:

- Hot water heating,
- Electric appliance use, and
- Climate control air conditioning.

This unique development by GridX Power and Mirvac has the ability to operate independently or in parallel with the electricity grid and acts as an extension of the grid at a given connection point for the supply of these essential household energy services.

Importantly Integral Energy (Network) has been a material supporter of the project and in this case has shown great industry leadership through this support and through the provision of very valuable industry advice to GridX during the development of the project.

Integral have shown they have a fundamental understanding of the issues effecting their network through their regulatory submission work which highlighted to IPART¹ the importance and ramification of the growing impact of air conditioning load on their own network in Western Sydney which is highly sensitive to temperature in terms of peak demand (and of course by inference other networks and transmission systems in Australia).

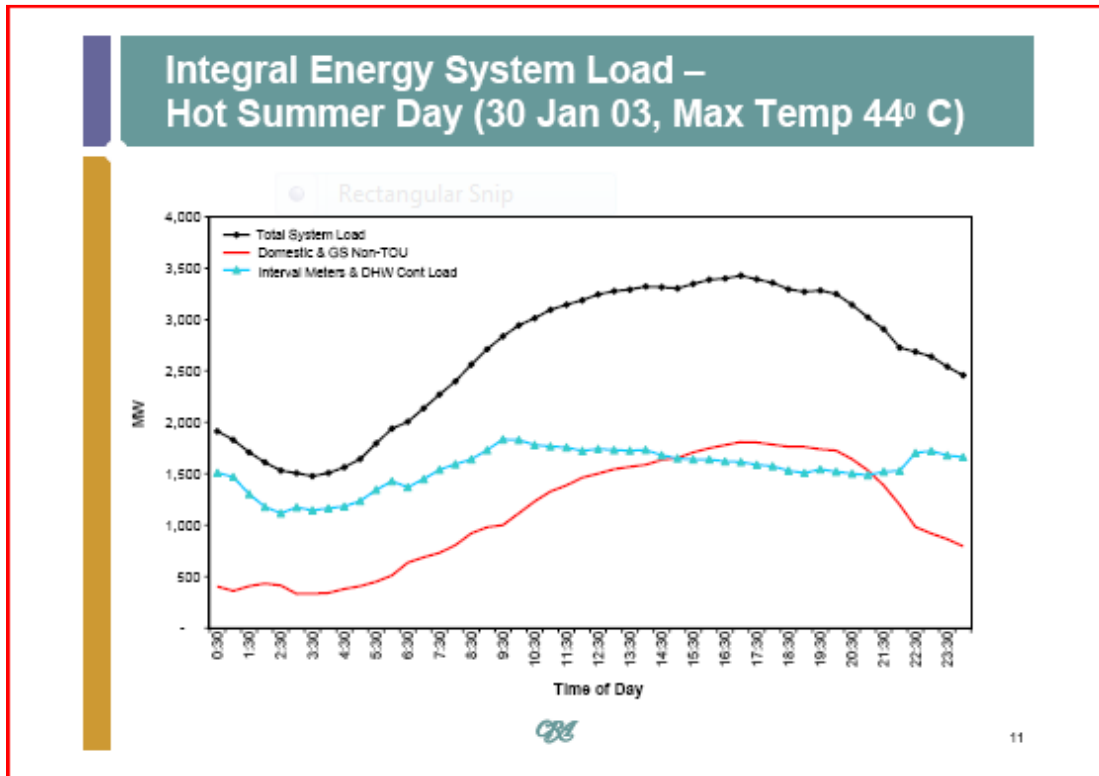
The following graphs are taken from their submissions² and although now some years old indicate the extent of the growing problem of servicing peak electricity demand created from refrigerated air conditioning system penetration and load growth in the residential and light commercial market (not only is penetration growing but the effective kW rating per household from air conditioners is also increasing indicating larger systems and multiple units per household or business).

This increasing peak demand requirement has for example seen the up-rating of design standards for new estates to double old ratings. But the important issue here is that whilst this cost is levied across developers and consumers the additional network is only utilised for a fraction of the year – only on very hot days. On these days there is also a substantial de-rating of overhead electricity network systems (including transmission systems) delivering further in-efficiencies.

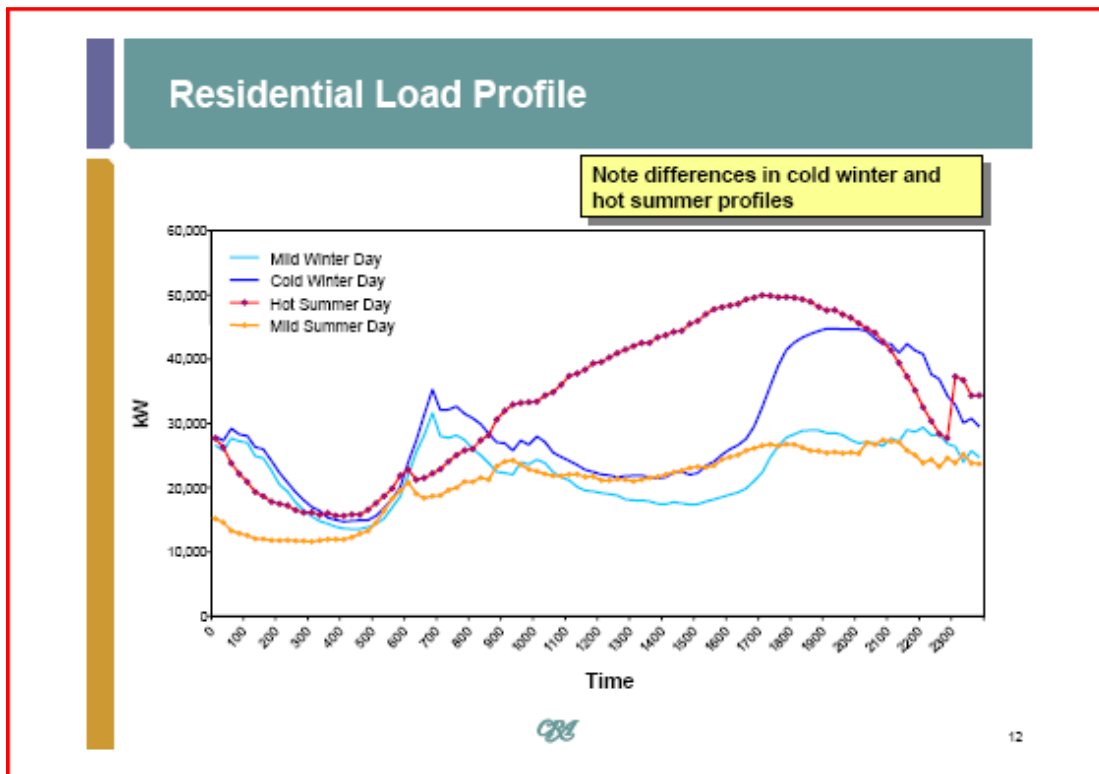
¹ Integral Energy – CRA Air Conditioning Impact Report, May 2003

² Integral Energy – Presentation to PICG meeting - Impact of Air conditioning on Integral Energy's network (CRA Report as above) - 18 June 2003

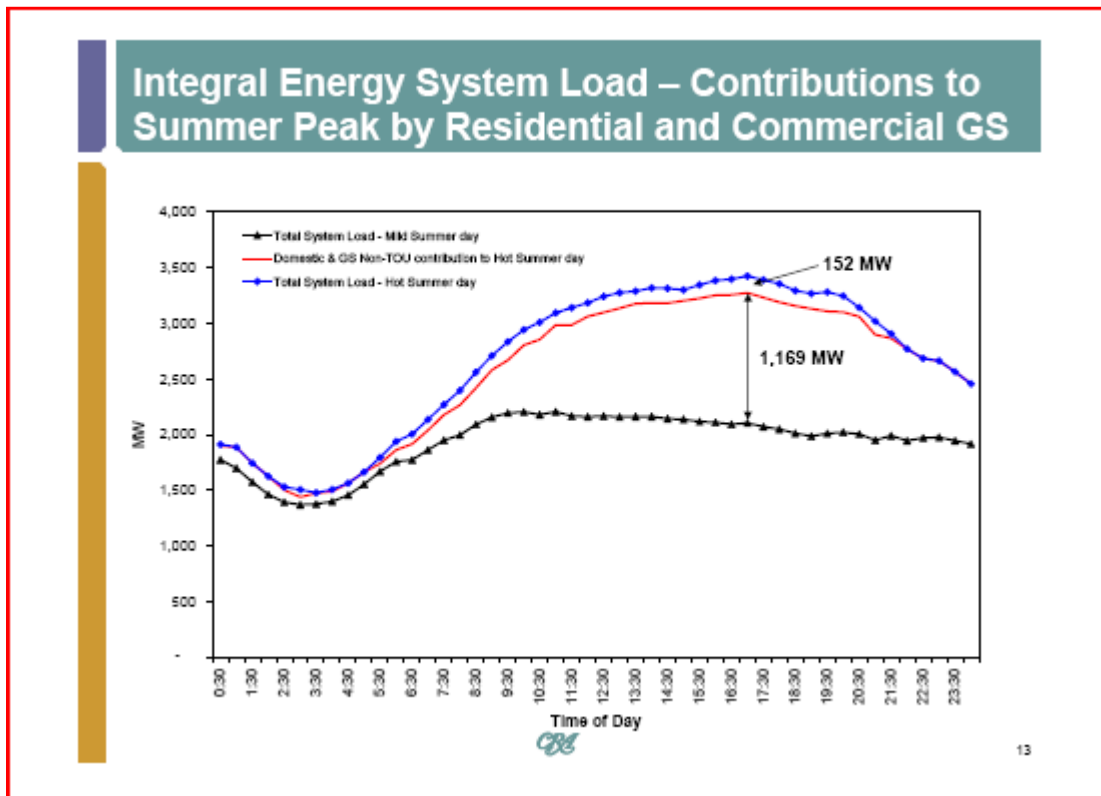
Hot Days Have Major Impact on Peak Demand



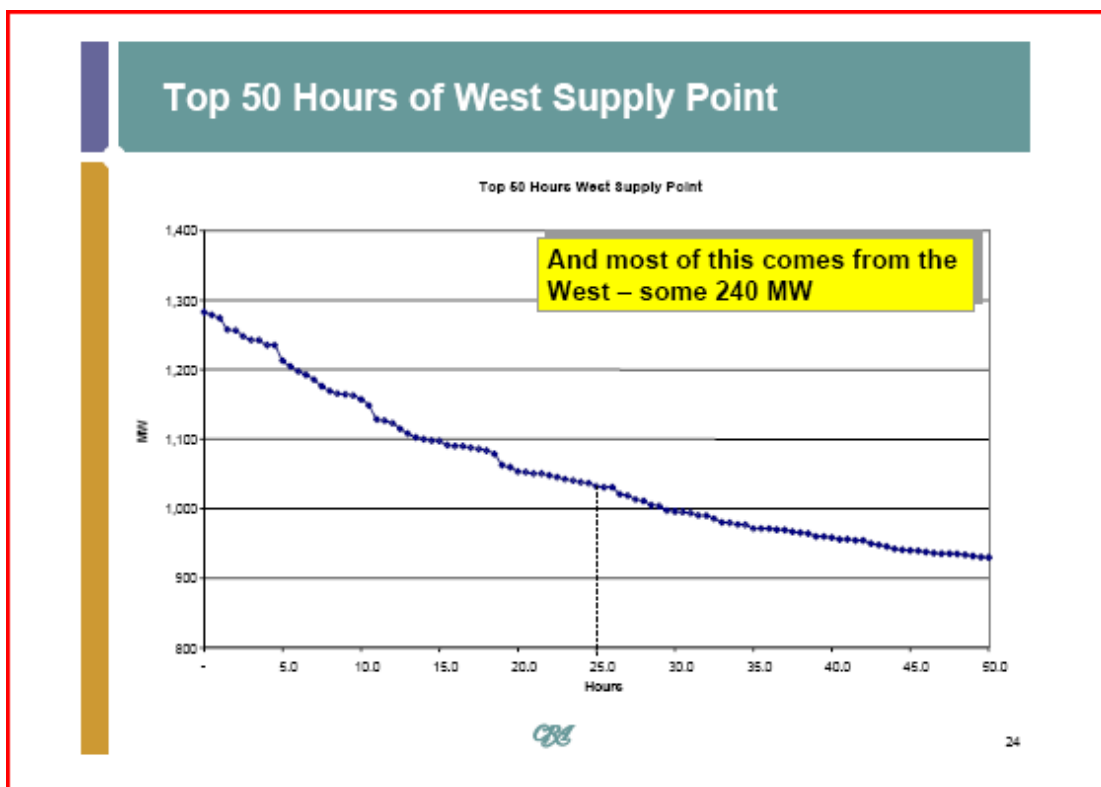
Mainly Caused By Residential Air Conditioning



And It is Driving Major Network Investments – Distribution and Transmission



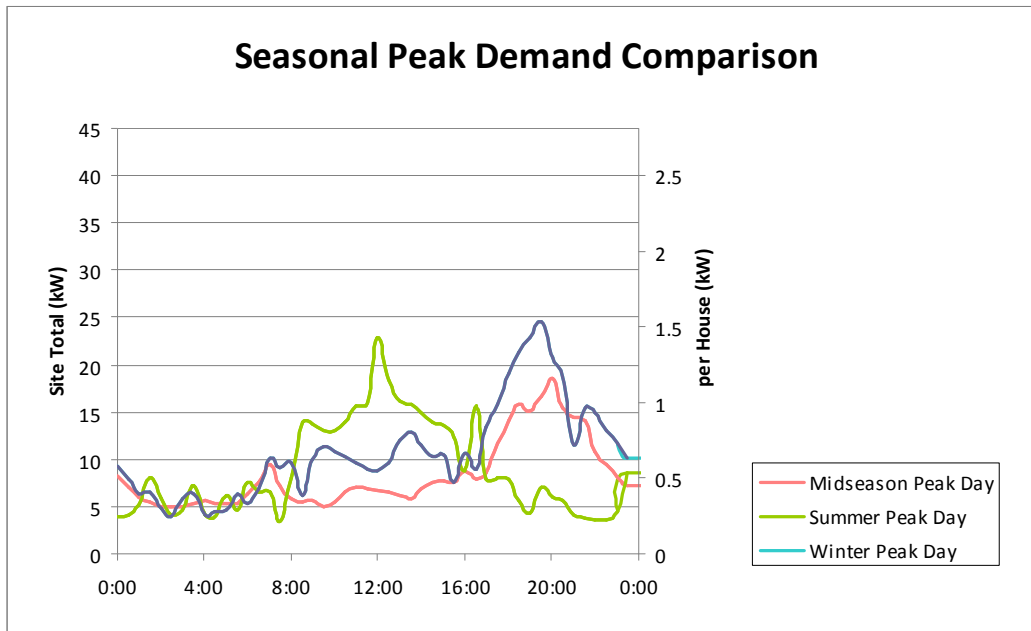
So Much Capacity - So Little Use



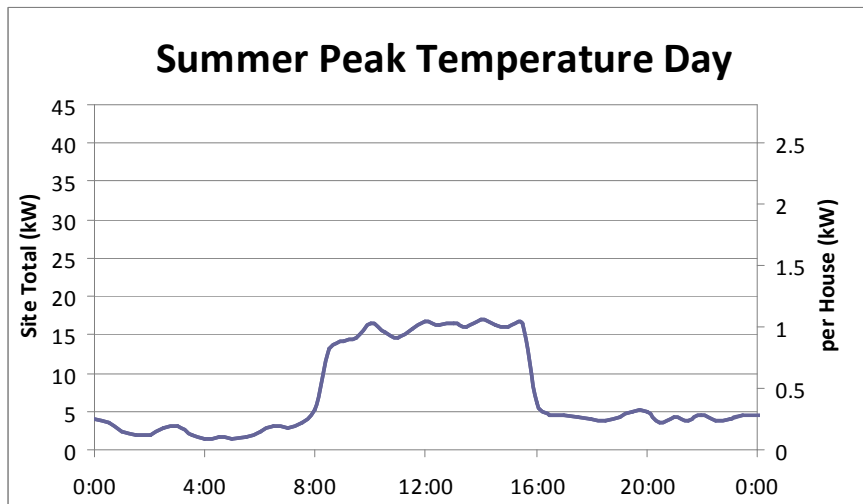
Glenfield Summer Electricity Consumption Data and Profiles

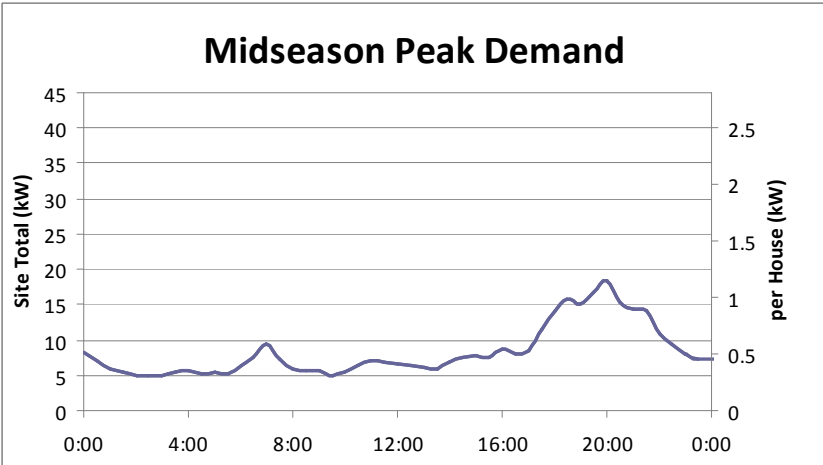
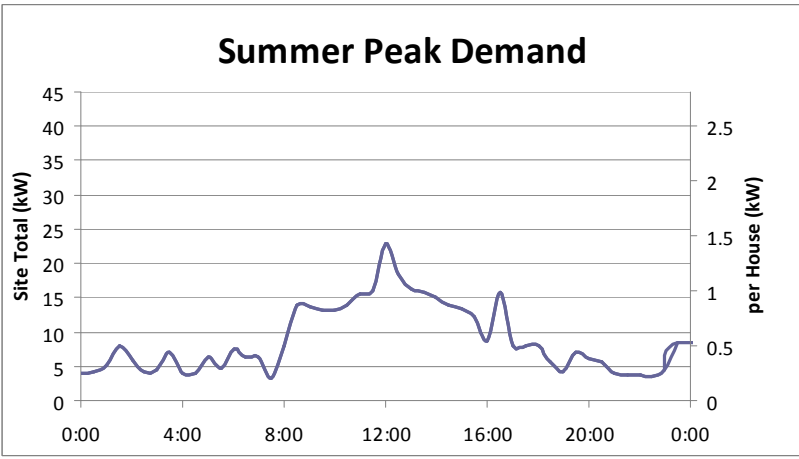
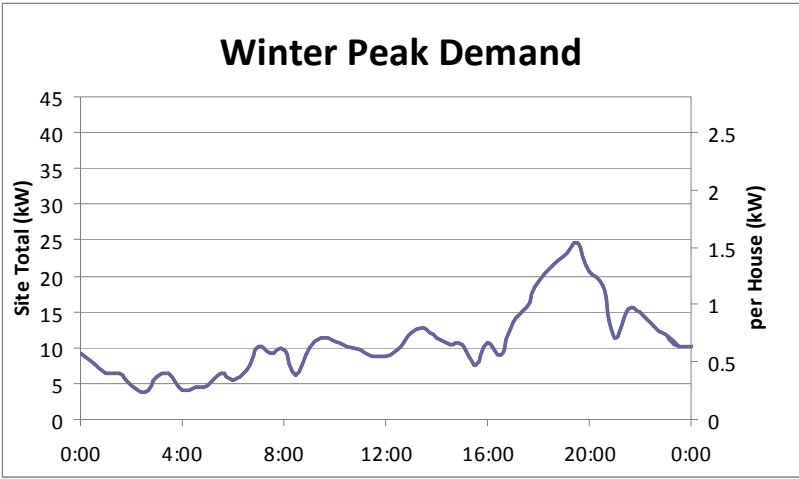
Peak Demand Days		Temperature (Holsworthy)		
Season	Date	Max	Min	Day
Summer	27/01/2007	33.7	17.5	Sat
Winter	16/07/2007	14.1	-1.5	Mon
Midseason	5/09/2007	17.2	7.3	Wed
Peak Temperature Day				
Summer	21/01/2007	41.3	16.4	Sun

The Peak Demand Day was a Saturday – but this was not the Peak Temperature Day



The Peak Temperature Day was a Sunday – but lower peak usage





This data demonstrates the effect of taking the temperature sensitive loads and delivering these using the waste heat from the generation system. In this process green emission credits are also generated as it is recognised as a much lower greenhouse intense solution that typical grid supply. This is without any credits for distribution network augmentation deferral.

Conclusion

Finally in our submission GridX would like to point out that the development of the National approach to the Electricity Rules not founded fully on economic principle without these proposed Rule Changes designed to allow greater demand side involvement in the “market” – given that it is hard to understand how any “market” can really exist with such involvement.

The need for demand side involvement to actually form a real market is a simple statement of fact that remarkably economists, the Productivity Commission and environmental activists are in violent agreement about and that has had and continues to have numerous reviews, papers and working groups examine and “support” yet it seems the issue has continually proven to much of a challenge during rule making and has required the TEC to actually detail the changes required.

At best this has occurred through a lack of understanding and exploration of the real options available on the demand side and at worst we are seeing regulatory capture through a business as usual approach. In reality this enormous investment being made in very low utilisations assets is somewhat bizarre and begs the question “there must be a better way to provide these services”?

Adoption of Rules that embrace or even give incentives for the trial and initial use of alternatives (as is done in many other countries) just makes good economic sense and is why GridX supports these changes. Currently the regime is wholly hostile and without a high degree of AEMC leadership will continue to struggle while higher and higher energy prices become a reality.