AUSTRALIAN ENERGY REGULATOR
PRELIMINARY POSITIONS

FRAMEWORK AND APPROACH PAPER
AUSGRID, ENDEAVOUR ENERGY & ESSENTIAL ENERGY

Regulatory Control Period Commencing 1 July 2014

Request for Submissions

This submission is made in response to the above framework and approach paper by the Australian Energy Regulator on Ausgrid, Endeavour Energy and Essential Energy.

BACKGROUND

Sustainable Sydney 2030

In developing its vision for the future, Sustainable Sydney 2030, the City of Sydney spent more than a year consulting its community and a consensus emerged on the way to make Sydney a greener, more global and connected city.

Some 90% of people wanted the City to take urgent action to tackle climate change, so the City made sustainability the overarching theme. A major objective of Sustainable Sydney 2030 is to position Sydney as one of the world's leading green cities in the race to counter climate change. To achieve this, the City has committed to reducing greenhouse gas emissions by 70% by 2030 from 2006 levels.

80% of the city's greenhouse gas emissions come from centralised power generation, primarily burning coal, which is inefficient, unnecessarily polluting, a waste of non-renewable resources and the primary cause of climate change. Key in the City's objective to tackle climate change is to supply 100 per cent of the city's electricity from local generating plants through a combination of energy efficiency and low or zero carbon decentralised energy, principally trigeneration that can be fuelled from natural gas or renewable gases.

The emission reduction targets will be delivered through what Sustainable Sydney 2030 calls "Green Transformers". These are a combination of green infrastructure, primarily trigeneration, but also waste and recycled water infrastructure. When combined with demand reduction, trigeneration will provide 70% of the electricity needs of the city in 2030 and reduce overall greenhouse intensity in the City of Sydney Local Government Area by 33%. This will need at least 477MW_e of trigeneration and cogeneration to be delivered by 2030. The balance of energy needs will come from waste heat from local electricity generation and renewable energy from within and in proximity to the City's Local Government Area. The combination of these actions is the Green Infrastructure Plan.

Green Infrastructure Plan

Developing the Green Infrastructure Plan and putting it into action is happening on two levels – for the city as a whole and by the City of Sydney leading the way and installing local green infrastructure projects in its own operations. The Green Infrastructure Plan comprises:

Decentralised Energy – Trigeneration Master Plan
Decentralised Energy – Renewable Energy Master Plan
Advanced Waste Treatment Master Plan
Decentralised Water Master Plan
Automated Waste Collection Master Plan

The City's integrated approach to a city-wide energy, water and waste infrastructure, for example, enables the trigeneration, recycled water and waste collection to share the same network infrastructure routes and stations. Recycled water could be treated by zero carbon waste heat from trigeneration and renewable gases and non potable water could be recovered from waste and used in the city's green infrastructure network.

Distribution and Transmission Network Charges

The Institute of Sustainable Futures, University of Technology Sydney 'Close to Home: Potential benefits of Decentralised Energy for NSW Electricity Consumers' report[1] established that over 2010-15, electricity network businesses in Australia are spending over $46 billion, more expenditure than the proposed $34 billion National Broadband Network.

In NSW, electricity networks are undertaking capital expenditure of $17.4 billion over the 5 years to 2013/14. This represents $2,400 per person and an 80% increase on the previous 5 year period. Average electricity prices in the Sydney electricity distribution network area are expected to increase by 83% during this period with the proportion of electricity bills that goes to pay network charges to rise from 40% to 60%.

The Institute of Sustainable Futures estimates that the City's plans to supply 70% of the Local Government Area's electricity needs from a 360MWe trigeneration network by 2030 could achieve savings in deferred electricity network costs and avoided costs of new power station capacity to serve the city's growing demand in the order of $1.5 billion by 2030.

Electric Air Conditioning and Peak Power

A key part of the reason for surging electricity prices is the need to build electricity assets for peak power demand, primarily electric air conditioning, for 4 days of the year to meet high demand on hot days. $11 billion of network assets is built to meet demand for just 100 hours a year and as much as 25% of electricity costs result from peak demand, primarily electric air conditioning, that occurs over a period of less than 40 hours a year.

[1] Institute of Sustainable Futures, University of Technology Sydney 'Close to Home: Potential Benefits of Decentralised Energy for NSW Electricity Consumers November 2010'
http://www.isf.uts.edu.au/publications/dunstanlangham2010closetohome.pdf

A 2kW reverse-cycle air conditioner costs $1,500 a year to operate and yet imposes costs on the electricity network of $7,000 since it adds to peak demand[2]. These network costs are not paid by the consumer operating the air conditioner but by all NSW electricity consumers whether or not they own air conditioners.

These network costs are significantly amplified by a city such as the Sydney CBD. For example, the Trigeneration Master Plan will displace 542MW of electricity peak demand, primarily electric air conditioning, which all NSW electricity consumers are currently paying for. This is equivalent to taking 271,000 - 2kW reverse-cycle air conditioners off from peak electricity demand.

Interim Decentralised Energy - Trigeneration Master Plan

The interim Trigeneration Master Plan was completed by the Kinesis consortium in December 2010 and placed on public exhibition until 28 January 2011. No negative comments were received. The interim Master Plan covers the four energy dense zones of the city – CBD North, CDB South, Pyrmont/ Broadway and Green Square. Together, these four zones would deliver 360MW_e of trigeneration which would exceed the City's 330MW_e trigeneration target under Green Transformers in Sustainable Sydney 2030.

The 360MW_e of trigeneration systems set out in the interim Master Plan would reduce electricity consumption by 30% and peak power by 60%. A key part of the reductions is the replacement of electrically driven air conditioning by thermally driven air conditioning. Across the four low carbon zones the Master Plan will reduce peak electricity demand by 542MW, down from 912MW to 370MW.

Trigeneration in the four low carbon zones will also reduce the City of Sydney's greenhouse gas emissions by between 1.1 million and 1.7 million tonnes a year depending on which operational performance is selected. This represents a reduction in greenhouse gas emissions of between 39% and 56% for the building sector and between 18% and 26% of the overall Sustainable Sydney 2030 target. Of key importance is the cumulative emission reduction of 10.6 to 15.3 million tonnes with potentially up to 19 million tonnes emissions reduction by 2030 depending on both the configuration of the decentralised energy network and the rate at which buildings within the four low carbon zones connect to the network.

The commercial performance of the interim Master Plan is commensurate with a sound financial return for the trigeneration systems operator. The estimated cost of the decentralised energy network or trigeneration systems for the four low carbon zones is estimated at $950 million ($440 million in 2010 dollars when discounted using 7% nominal rate).

The Trigeneration Master Plan is the leading and the largest of the Master Plans in the Green Infrastructure Plan in which other Master Plans will follow utilising the same infrastructure routes and co-located stations, wherever possible.

[2] Australian Government 'Draft Energy White Paper – Strengthening the Foundations of Australia's Energy Future December 2011 http://ret.gov.au/energy/Documents/ewp/draft-ewp-2011/Draft-EWP.pdf

Final Decentralised Energy - Trigeneration Master Plan

The interim Trigeneration Master Plan will be replaced by the final Trigeneration Master Plan[3] approved by Council on 25 June 2012 to go on public exhibition for 28 days. The final Master Plan comprises the original four low carbon zones plus the following that were not included in the interim Master Plan:

1. Air quality assessment confirmation by the CSIRO;

2. Gas network augmentation feasibility study by Jemena, the gas network distribution operator for Sydney;

3. Increase in trigeneration capacity for the Green Square Low Carbon Zone from 20MW_e to 32MW_e;

4. Additional precinct scale trigeneration of 38MW_e in trigeneration 'hotspots';

5. Additional small scale cogeneration and fuel cells outside of the Low Carbon Zones and trigeneration 'hotspots' amounting to 67MW_e;

6. Detailed case studies at the request of the Sydney Better Buildings Partnership on connection to the trigeneration decentralised energy network for particular commercial, residential and university buildings;

7. Case study on domestic fuel cells; and

8. Update of enabling actions.

The final Trigeneration Master Plan identifies 477MW_e of trigeneration and cogeneration capacity across the City's LGA. This would reduce greenhouse gas emissions across the LGA by 24% to 33%. This equates to a reduction of 1.4 to 2.05 million tonnes of greenhouse gas emissions a year.

Renewable Energy Master Plan

The Renewable Energy Master Plan will set out the renewable electricity and renewable gases resources and locations both inside and outside the LGA. A proximity principle of 250km from the city has been applied for renewables outside the city to avoid investment in remote renewables and minimise associated increases in network charges to consumers.

The final Arup report shows that 55% of the 30% renewable electricity target can be delivered within the LGA and 45% from outside the LGA. In addition, renewable gases and fuels needed to replace natural gas for the 360MW_e of trigeneration in the interim Trigeneration Master Plan can be sourced from feedstock within 250km of the city, most within 50km of the city.

Together, this would deliver reductions in greenhouse gas emissions of 2.15 million tonnes a year which equates to a 31.5% reduction in overall greenhouse gas emissions from the 2006 base year and potentially up to 100% of the city's local

[3] Draft Final Decentralised Energy Master Plan – Trigeneration http://www.sydney2030.com.au/development-in-2030/city-wide-projects/powering-sydney-allan-jones

energy target (70% trigeneration plus 30% renewable energy) being met from renewable energy.

The final Renewable Energy Master Plan will be published later in 2012.

City's Trigeneration Project

Following completion of the 2 year long procurement process Cogent Energy (owned by Origin Energy) were appointed by the City as the Energy Services Provider to design, finance, build, operate and maintain the city-wide trigeneration network. Heads of agreement were signed in April 2012 and the development, energy sales and other agreements were completed in August 2012.

A key feature of the agreement is that the trigeneration energy centres and low carbon electricity and zero carbon thermal energy outputs will be owned and retailed by Cogent Energy and the thermal reticulation network will be owned by the City of Sydney.

Stages 1 and 2 of the project comprise 63.5MWe of trigeneration across four precincts plus supply to all 230 of the City's buildings by 2015. The City's buildings will be first to be supplied with low carbon energy which is expected to be commissioned by July 2014.

Stage 3 represents the balance of the trigeneration network to be rolled out by 2030.

AER FRAMEWORK AND APPROACH PAPER

Summary

The City welcomes any approach that seeks to draw back the excessive capital investments in networks and the associated excessive increases in network charges during the current determination period 2009-2014 which is making electricity unaffordable for some and impacting on the economic well-being of the City of Sydney local government area.

Distribution Network Service Providers (DNSP's) must not be rewarded for gold plated capital investments in the electricity networks which is not needed. DNSP's should instead be incentivised to invest in demand side management and embedded generation technologies, particularly those that reduce peak electricity demand.

Application of Efficiency Benefit Sharing Scheme

The 30:70 benefit sharing ratio between the Distribution Network Service Provider (DNSP) and its customers must be transparent with the efficiency gained (or lost) set out on a project by project basis in the public domain. The 70% benefit to customers must be real and demonstrated by reductions in the network charges component of electricity bills to consumers.

In order to demonstrate transparency all electricity bills, including residential and small business customers electricity bills, must set out clearly the separate costs for

peak, shoulder and off peak network charges and retail charges so that consumers can see how their electricity bills are made up and which components are decreased or increased through efficiency gains and losses. Such information would also incentivise consumers to use electricity appliances at more favourable times of the day in terms of electricity costs and so benefit the networks and consumers as a whole, particularly with the management of peak demand.

Application of Demand Management and Embedded Generation Connection Incentive Scheme

As can be seen in the Background section of this submission significant savings can be made in demand side management and embedded generation schemes such as the City's trigeneration and renewable energy schemes.

Different demand side actions and technologies should be incentivised based on the reductions in electricity demand, particularly peak demand which this has been a primary cause of excessive capital investment in the networks and the associated rising cost of electricity bills. Electric air conditioning and heating should be actively disincentivised and technologies such as trigeneration that displace electric air conditioning and heating should be positively incentivised through a tiered financial reward scheme. Embedded generation that is able to correct low power factors and/or high input impedance from the grid should also be rewarded.

The Australian Energy Regulator should also remove the regulatory barriers to embedded generation similar to the removal of the regulatory barriers to embedded generation in the UK as set out in the City's submissions to the Prime Minister's Task Group on Energy Efficiency[4] and the AER Approach to Retail Exemptions Issues Paper[5] and the productivity to increase the uptake of embedded generation, particularly large scale embedded generation, which can provide significantly reduce capital investments in networks and provide cost savings to all consumers whether or not they are near an embedded generation scheme.

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[4] City of Sydney Submission to the Prime Minister's Task Group on Energy Efficiency Issue Paper 30 April 2010 http://www.climatechange.gov.au/government/submissions/pm-task-group/~/media/submissions/pm-taskforce/papers/102-city-of-sydney.ashx

[5] City of Sydney submission to the AER on Retail Exemptions Issues Paper 27 July 2010 http://www.aer.gov.au/sites/www.aer.gov.au/files/Submission%20-%20Issues%20Paper%20-%20City%20of%20Sydney.pdf