

## Allan Jones and energy efficiency: just getting things done

Allan Jones is the man in charge of steering the **City of Sydney's ambitious plan** to produce 100 per cent of its electricity needs from local energy and to reduce emissions by 70 per cent by 2030. Like his hero, the nineteenth century British engineer Isambard Brunel, he has a reputation for 'just getting things done'.



Credit: City of Sydney

Mr Jones has been the City of Sydney's Chief Development Officer, Energy and Climate Change since 2008. Originally from the United Kingdom, he made his name as Chief Engineer of the borough of Woking, where he steered a move to decentralised energy. By 2004, the borough of roughly 100 000 people was producing nearly 100 per cent of its own power and had dropped its CO<sub>2</sub> emissions by 77 per cent. Mr Jones went on to set up and run London's Climate Change Agency.

At present, some 80 per cent of Sydney's carbon emissions come from electricity produced by large coal-fired power stations in the Hunter Valley and elsewhere. As in Woking and London, Mr Jones' plans for the City of Sydney include production of decentralised energy in the form of cogeneration (cogen) and trigeneration (trigen). In cogen, gas-fired units generate electricity and deliver it locally, avoiding some of the high costs of transmission. The heat from electricity production is captured and used to heat and cool buildings. Cogen systems are more than twice as energy efficient and emit less than half the greenhouse gas emissions of a coal-fired power station.

In countries such as Denmark and the Netherlands, more than 50 per cent of energy comes from cogen. In a further step – trigen – waste heat is converted to chilled water for air-conditioning and refrigeration. The system in Sydney will be mainly trigen.

Michele Sabto sought Allan Jones' views on the prospects for decentralised energy in Sydney and across Australia.

***1. What key strategies will be used to reach Sydney's ambitious 2030 targets of 70 per cent emissions reduction and***

### ***100 per cent local electricity generation?***

The first citywide triggen network in Australia will provide 70 per cent of electricity needed across the inner city and surrounding suburbs by 2030 (the remaining 30 per cent is planned to come from renewable resources).

In April 2012, the City is set to sign a heads-of-agreement with Cogent Energy (owned by Origin Energy) for the installation of the triggen networks or precincts for council and privately owned buildings.

The City is also currently negotiating with solar companies, after a tender process, on a \$10 million project to install photovoltaic panels on council buildings later this year.

Solar hot water and/or photovoltaic systems have already been installed on 18 sites at a cost of \$1 million. These include Sydney Town Hall, libraries, community centres, child care centres, and depots in Redfern, Ultimo, Erskineville and Kings Cross. The largest array is 240 solar panels on the Town Hall. Together, these projects have reduced carbon emissions by 180 tonnes per year.

In June 2012, the City will be releasing a renewable energy master plan to quantify the potential of proximate (within 250 kilometres) solar electric, solar thermal, wind energy, geothermal and other forms of renewable energy. The plan will also quantify the potential of renewable gases recovered from household and commercial garbage, sewage, agricultural and other wastes.

### ***2. What are some of the major barriers facing the implementation of decentralised energy in Australia?***

The main regulatory barrier is the inability to trade surplus power to other buildings without participating in the National Electricity Market (NEM), which incurs significant set up and operational costs out of proportion to the scale of energy produced. The NEM was intended for large coal-fired power stations but, inadvertently, creates a market barrier to decentralised energy that can only be removed by regulatory reform.

In Sydney, this has been overcome by selecting Cogent, which has a licence to trade on the NEM, to build and operate the proposed triggen network. However, the City is still pursuing the removal of the regulatory barriers so that smaller systems – such as local council schemes and community wind and solar farms – can trade their surplus electricity themselves (i.e. without the need to go through a large energy company) over the local electricity distribution network.

### ***3. What are the major differences between London and Sydney regarding the challenges and barriers to decentralised energy production?***

The regulatory barriers to decentralised energy in Woking were overcome by using private wire networks. This allowed generators with a capacity of below 50 MWe (megawatt electrical) to trade electricity outside the national electricity market, but limited household supply to 1 MWe per site. Hence, there were 80 plus private wire networks in Woking.

However, London was too large to adopt this measure. Instead, the United Kingdom government ended up creating a second licensed electricity market for decentralised energy.

### ***4. Have you been impressed by any other local government energy efficiency initiatives in Australia?***

Knowing how difficult it is for a small local authority to do anything in this area, I'm particularly impressed with Willoughby Council in Sydney, which has installed both cogen and solar photovoltaics. I'm also impressed by Places Victoria, a Victorian government authority that is installing Australia's first precinct-scale triggen system (6 MWe), and Qantas, who are installing an 8 MWe triggen system at Sydney Airport, with another 3 MWe to come next year.

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Credit: City of Sydney

**5. *Where do you think Australia is doing well or leading in urban energy efficiency, and where are we still struggling?***

Trigen, recycled water, automated waste collection, renewable energy and advanced waste treatment are not new technologies. But the City of Sydney project will be the first where these measures will be installed in the same place.

The companies in the Sydney Better Building Partnership have impressive environmental achievements, and some lead their sector on the Dow Jones Sustainability Index. They are constructing and retrofitting buildings that have set new standards for sustainability.

Where Australia is lagging behind the world is in development control. In the United Kingdom, the Merton Rule requires large developments to meet 10 per cent of their energy consumption by onsite renewable energy. London goes one better by requiring energy efficiency over and above the building regulations, decentralised energy, and 20 per cent further emissions reduction to be met by on or near-site renewable energy. In addition, the United Kingdom has statutory codes for sustainable homes and buildings aimed at achieving zero carbon residential and non-residential development by 2031.

Australia is falling behind in decentralised energy compared with Europe, North Asia and the United States. In 2006, Australia ranked 34th of 40 countries for decentralised energy generation. Just five per cent of total generation in Australia comes from decentralised sources (mostly in large industrial applications), compared with, for example, 20 per cent in Germany and 12 per cent in India.

**6. *What achievements are you most proud of during your career in urban energy efficiency?***

Reducing CO<sub>2</sub> emissions in Woking. This involved groundbreaking work on energy efficiency, trigen, renewable gases from waste, alternative fuels for transport, renewable energy and fuel cells. By 2004, Woking had installed 81 private wire decentralised energy systems, nearly 10 per cent of the United Kingdom's total installed solar energy photovoltaics, and the first fuel cell combined heat and power plant in the United Kingdom.

In London, I'm proud of the removal of the regulatory barriers to decentralised energy, and the revision to the London Plan, which led to increased energy efficiency over and above the United Kingdom's building regulations and significantly increased use of decentralised and renewable energy.

Sydney may well be the third big achievement.

**7. *Who has inspired and motivated you in your career?***

Thomas Edison, for building the first public electricity supply in Manhattan, which was actually a city-wide cogen system; and the 19th century British engineer, Brunel, for, well, just getting things done! <sup>1</sup>

**8. What do you think will be the key future challenges in relation to how our cities deal with climate change and energy?**

On the assumption that Australia delivers on climate change mitigation, I think its key challenge is climate change adaptation – since it is likely to be the country most severely affected by climate change. Most cities are on the coast or along rivers, so they will be impacted by both rising sea levels and floods. It is likely that climate change will exacerbate Australia's historic swings between floods and droughts.

<sup>1</sup> Isambard Kingdom Brunel (1806–1859) is best known as Chief Engineer for the Great Western Railway Company, where he played a key role in the design of the network of tunnels, bridges and viaducts for the London-to-Bristol line. He was also responsible for the design of several famous ships and for the redesign and construction of many of Britain's major docks, including Bristol, Monkwearmouth, Cardiff and Milford Haven.

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