

ITEM 5. GREENPOWER AND RENEWABLE ENERGY FOR THE CITY OF SYDNEY ORGANISATION**FILE NO: S050466****SUMMARY**

The City of Sydney Council is entering its third year of carbon neutrality (i.e. zero net emissions). This has been largely achieved by purchasing carbon offsets in the form of 100% GreenPower and other accredited greenhouse gas offsets. This was always envisaged as a transitional strategy whilst the City of Sydney found ways to deliver its major carbon reducing projects.

These projects, such as the building energy efficiency retrofit, LED (light emitting diode) lighting and trigeneration projects, will have a direct bearing on the reduction in Greenhouse Gas emissions in the City's own buildings and operations. All of these projects now have budget allocations and project plans.

However, a major component of the City's Sustainable Sydney 2030 carbon reducing targets also requires the delivery of renewable energy projects. Apart from the Town Hall Solar Panel project and small scale solar projects on other city properties there is currently no separate budget for delivering significant renewable energy projects on/in the City's own properties and operations.

With the implementation of trigeneration commencing this year, the City of Sydney will eventually supply itself with low carbon electricity (and heat and cooling from the waste heat of local electricity generation). In time it will therefore reduce its reliance on coal fired electricity, replacing it with by gas fired trigeneration. Therefore, it will not be possible to continue to be supplied with GreenPower, since GreenPower offsets grid, coal fired electricity.

This report recommends restructuring the City's approach to carbon neutrality, green power and renewable energy to achieve greater environmental outcomes.

It proposes that the City of Sydney maintain its 100% carbon neutral status through the purchase of more cost effective alternative carbon offsets and diverts the funds set aside each year for GreenPower (approximately \$2m) into a Renewable Energy Fund for implementing renewable energy on/in the City's own property and operations.

It also recommends that the city retire, rather than sell any Renewable Energy Certificates achieved as renewable energy is installed. This way the City of Sydney's efforts to reduce Greenhouse Gas Emissions through renewable energy projects will go beyond the Federal Governments 20% Renewable Energy Target – increasing the amount of renewable energy generated in Australia.

This report also sets out how renewable energy on/in the City's own property and operations can be upscaled and accelerated through using mechanisms such as bulk procurement framework agreement contracts.

RECOMMENDATION

It is resolved that:

- (A) the City's GreenPower purchase contract be replaced by a Renewable Energy Fund of up to \$2M per annum that will be used for renewable energy projects on/in the City's own property and operations;
- (B) all of the City's carbon emissions, including emissions from coal fired grid electricity generation, be offset by more cost effective alternative accredited carbon offsets, noting that the City of Sydney will aim to purchase cost effective alternative accredited carbon offsets that go beyond the Federal Government's Kyoto Target;
- (C) the City of Sydney retires all Renewable Energy Certificates achieved as a consequence of its renewable energy projects; noting that this way our renewable energy projects will go beyond the Federal Government's 20% Renewable Energy Target thus increasing the amount of renewable energy in Australia; and
- (D) a framework agreement contract for solar photovoltaics be procured by the City to implement a series of photovoltaic projects as a first stage to the procurement of other forms of renewable energy on/in the City's property.

ATTACHMENTS

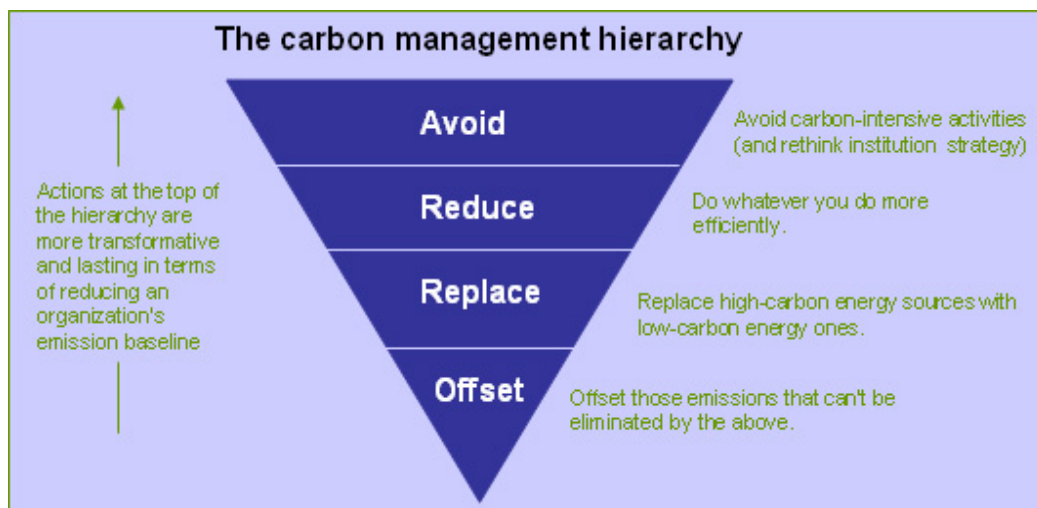
Nil.

BACKGROUND

1. On 27 October 2006, Council resolved to reduce its operations dependence on fossil fuels by converting to 100% green power in the short term and reducing the City's actual energy use in the medium term. With the adoption of the Environmental Management Plan 2007 on 25 June 2007, Council resolved to become carbon neutral, and the City became the first carbon neutral local government in Australia, through energy efficiency, GreenPower and carbon offsets. At this time the City of Sydney also set an interim target to reduce its own Greenhouse Gas emissions by 20% by 2012.
2. On 30 June 2008, Council adopted Sustainable Sydney 2030. The key climate change targets in the plan for the City of Sydney organisation and the City of Sydney Local Government Area (LGA) are:
 - (a) 70% reduction in greenhouse gas emissions from 2006 levels by 2030;
 - (b) 70% of the city's electricity requirement within the LGA to be met by a Green Transformers network – (which refers to the installation of new green infrastructure such as trigeneration by 2030); and
 - (c) 25% of the city's electricity requirement within the LGA to be met by renewable energy by 2030;
 - (d) 100% local generation by 2030.
3. The City of Sydney's organisational targets are the same as the LGA targets. The majority of the organisation's Greenhouse Gas emissions come from the same three sources as the majority of the LGA's Greenhouse Gas emissions – that is buildings, street lighting and waste. The City of Sydney's organisational emissions reduction program is an opportunity to "show by doing". By implementing the same infrastructure for itself as it is advocating others should do, will:
 - (a) demonstrate how it can be done;
 - (b) shoulder the burden of risk that comes with going first; and
 - (c) demonstrate leadership.
4. Renewable energy is essential to any meaningful emissions reduction plan, and is expected to comprise at least 25% to 30% of electricity supply to deliver the 100% local generation target across the LGA by 2030. Setting up a renewable energy fund to implement this part of our program is one of the keys to delivering the overall targets in energy and carbon reductions in Sustainable Sydney 2030

Carbon Neutrality

- In 2008, the City of Sydney became the first carbon neutral local government in Australia through energy efficiency, GreenPower and offsets. This is in accordance with recognised principles of carbon management, depicted below.



Source: www.yale.edu/sustainability/images/carboman.jpg

- The City was advised by a leading consultancy which emissions to measure and report on, using the WRI *Greenhouse Gas Protocol*. The following emissions and offsets are included within the City's inventory:

| Emissions (tonnes CO2e) | 2006/07 | 2007/08 |
|------------------------------------------------------------------------|----------------|----------------|
| Scope-1. onsite gas usage, fleet emissions, and refrigerant leakage | 4,363 (9%) | 4,311 (9%) |
| Scope-2 mains electricity | 35,002 (72%) | 36,344 (71%) |
| Scope-3 events, flights, taxis and major contractors | 9,192 (19%) | 10,319 (20%) |
| Total emissions | 48,557 | 50,974 |
| Electricity emissions | 41,688 (86%) | 43,253 (85%) |
| Non-electricity emissions | 6,869 (14%) | 7,721 (15%) |
| Offsets (tonnes CO2e) | 2006/07 | 2007/08 |
| GreenPower | -41,687 | -43,253 |
| Offsets - bulk purchase | -5,983 | -7,721 |
| Other offsets | -316 | |
| Scope-3 (fuel and gas extraction, production and transport) exclusions | -570 | |
| Total offsets | -48,557 | -50,974 |
| Net CO2e emissions | 0 | 0 |

Source: www.cityofsydney.nsw.gov.au/Carbon

7. Emissions avoidance and reduction is the highest priority, and the City has many programs underway including:
 - (a) \$18.2M investment in property energy efficiency upgrades;
 - (b) trigeneration tender for multiple City sites;
 - (c) installation of renewable energy to City owned sites;
 - (d) energy reporting and management systems;
 - (e) street lighting improvement program;
 - (f) efficient design and operation of new and upgraded buildings; and
 - (g) fleet emissions reductions.
8. Each year, the City quantifies its emissions based on energy consumed the previous financial year (so as to use known quantities). The City's inventory is compiled using the Emissions Tracker software developed by Microsoft for C40 cities.
9. The emissions inventory is independently verified and used to tender for the bulk supply of 100% GreenPower based on emissions from the City's use of electricity, and other offsets for remaining emissions.
10. The City applies stringent criteria in selecting GreenPower and offset products, assessing environmental impacts, effective Greenhouse gas reduction, accreditation standard, and rating by environment non-government organisations. The City also ensures information about its carbon neutral program is transparent and available for public scrutiny. All reports and accreditation certificates can be found at www.cityofsydney.nsw.gov.au/Carbon

Government Policy and Programs

11. Since the decision to become carbon neutral in 2007, there have been substantive changes to government policy and programs, nationally and internationally. The City has also adopted Sustainable Sydney 2030, which includes the target for 25% of electricity in the Local Government Area to be from renewable energy by 2030.
12. The Australian Government target is for a 60% reduction of Greenhouse Gas emissions by 2050 based on 2000 levels. Interim 2020 targets are unknown at this stage but likely to be between 5% to 25% depending on the Copenhagen Accord and other international negotiations.
13. The status of the Carbon Pollution Reduction Scheme (CPRS), or any form of carbon levy or tax remains uncertain. However, given that Australia has ratified the Kyoto Protocol, there is effectively already a cap on Australia's emissions which is for a 108% increase of 1990 emissions by 2012. Even this level is considered inadequate to avoid the risk of damaging climate change. Globally it is recognised that emissions must be cut at least 70% by 2050 based on 1990 levels – which is in line with the City of Sydney target.

14. Effectively, Australia's Kyoto target means that all purchases of GreenPower and private or Government investment into energy efficiency are assisting to meet, rather than being additional to this target. To cause additional Greenhouse Gas abatement, the City would need to purchase and retire accredited offsets from overseas, or, if available, local offsets that are not recognised by Kyoto such as soil carbon.
15. The Australian Government has adopted a Renewable Energy Target of 20% by 2020 for the electricity sector. Emissions saved under Renewable Energy Target (RET) are not additional to Australia's emissions targets. For each megawatt of electricity generated from renewable energy, the generator creates one Renewable Energy Certificate (REC). Under the Solar Credits Scheme, small scale systems actually receive five Renewable Energy Certificates (REC) per megawatt – to financially incentivise uptake. Energy retailers purchase and retire Renewable Energy Certificates (REC) equal to their yearly target. Implications for the City include:
 - (a) the Sustainable Sydney 2030 target is for 25% of electricity used in the LGA to come from renewable supplies by 2030, meaning that the City needs to stimulate uptake additional to the Renewable Energy Target (RET), for example by installing renewable energy at City owned locations; and
 - (b) installing renewable energy will reduce the City's grid electricity usage and costs regardless, but Renewable Energy Certificates (REC) also have a value which the City could sell to recoup some of the investment costs. If the City sells its Renewable Energy Certificates (REC) its renewable energy projects would be counted within Australia's Renewable Energy target. If the City retires the Renewable Energy Certificates, emissions saved would be additional to the Renewable Energy Target. However this would still not make a difference to Australia's emissions cap as set through our commitment to the Kyoto agreement – but it would increase the amount of renewable energy available in Australia.
16. Recent Electricity Network Regulation determinations by the Australian Energy Regulator have seen large spending approvals to electricity network operators, with gas determinations underway. These costs are passed onto consumers, with Independent Pricing and Regulatory Tribunal (IPART) estimating typical electricity bill increases around 40% by 2013. Much of this expenditure is to install new transmission infrastructure to support large, centralised energy generators, including coal, gas and renewable energy. Part of this expenditure could be avoided by local low carbon and renewable energy projects.

Green Power

17. GreenPower is a government accreditation program for renewable energy. It is bought by a customer's energy provider on their behalf. When a customer chooses to buy a GreenPower product, the extra a customer pays in addition to their grid electricity bill is invested in the renewable energy sector.
18. GreenPower is Australian renewable electricity, accredited by the NSW Government, to ensure the renewable energy is new, and meets certain environmental criteria. Renewable Energy Certificates (REC) used for GreenPower cannot be double counted and are additional to the mandatory Renewable Energy Target. However, GreenPower is not additional to Australia's Kyoto agreement emissions targets.

19. When purchasing electricity from centralised power generation or the grid it is highly unlikely that the electricity reaching the consumer will be renewable energy. The laws of physics dictate that electricity will always flow to the nearest load so the electricity reaching the consumer will be the same as before and will be wholly or nearly wholly coal fired electricity, the primary cause of climate change.
20. By participating in a GreenPower product, a consumer may be having an effect on the energy sources used and ultimately might be helping to promote and expand the use of GreenPower. They are also making a statement to policy makers that they are willing to pay a price premium to support renewable energy.
21. However, large scale grid connected renewable energy generation tends to be in remote rural areas where there is a low energy demand and the transportation of such energy to high energy demand areas, such as urban areas and cities, would be highly inefficient and in some cases impossible. It could also be continuing to support highly inefficient predominantly coal fired centralised power generation, the primary user of the central electricity grid, and the significant reinforcement/augmentation of the grid transmission network to serve distant urban energy loads.
22. Grid electricity offsets have been purchased by the City under the accredited GreenPower scheme. The City’s GreenPower purchase contract record is, as follows:

| Purchase Year | 2006 | 2007 | 2008 | 2009 |
|----------------------------|------------------|-------------|-------------|-------------|
| GreenPower purchase (MWh) | 3,312 | 7,645 | 39,328 | 40,836 |
| Percent of electricity use | 10% | 20% | 100% | 100% |
| GreenPower cost | \$140,422 | \$272,008 | \$2.3M | \$1.9M |
| Main Provider | Climate Friendly | AGL | COzero | COzero |

23. In view of these issues, it is appropriate to review the City’s carbon neutral program to ensure that it continues to achieve best environmental and awareness outcomes in a cost effective manner.
24. So far, the City has spent more than \$4.6M on GreenPower products to remain carbon neutral. Moving forward, purchasing lower cost offsets would free up funding for investing into renewable energy on/in the City’s own property and operations, with the additional benefit of providing a return on investment by reducing grid energy consumption.

Renewable Energy for the City’s Property Portfolio

25. The City has already implemented a number of renewable energy projects on its own property portfolio; three photovoltaic and ten solar hot water projects completed, with a further three solar water heating projects under construction funded with a 100% grant from the Regional and Local Community Infrastructure Programme (RLCIP), plus the photovoltaic roof at Sydney Town Hall funded as part of the safety upgrade.

26. However, a sustainable budget, program and mechanism will need to be put in place to continue to not only implement renewable energy in/on the City's property portfolio but also to upscale and accelerate the renewable energy program if the City is to deliver its targets for its own buildings and to set an example to others on the 'show by doing' principle. Therefore, the City's Sustainable Sydney 2030, climate change and decentralised energy targets would be best served by utilising the money that would have otherwise been spent on GreenPower purchase to create an annual budget for renewable energy.
27. The expenditure on GreenPower is about \$2M a year. This will be used to create an annual budget for the Renewable Energy Fund. Such a fund would finance, for example, 150kW_p to 200kW_p of photovoltaics a year for a \$2M per annum fund, saving the City about \$90,200 a year on its energy bills based on the same payback criteria for the Sydney Town Hall photovoltaic roof. At this rate, it is estimated the City would achieve its target to generate 25% of its own electricity from renewable energy by 2020.
28. However, if photovoltaics were procured as a large scale project or by a framework agreement contract, the capital costs per kW_p could be reduced, meaning the City would achieve its target sooner.. This also has the advantage of reducing approval, procurement and project management costs and resources.
29. For example, a framework agreement contract could be competitively procured for the City's photovoltaics starting out with specific projects in the first year, with a schedule of rates for the second and subsequent years against which subsequent projects are called off against. The contract could also require the contractor to survey and report on the City's property portfolio for future photovoltaic projects. This is the mechanism that Woking used to deliver 10% of the UK's total photovoltaic capacity in a period of three years. Similar approaches can also be adopted for other renewable energy technologies and potentially for investment in large scale renewable energy projects outside the immediate LGA in future years.
30. In terms of early projects, iconic or landmark projects should also be implemented, such as a glass/glass photovoltaic solar shading canopy at the Customs House plaza, or the first phases of the photovoltaic roof at Dunning Avenue. Some projects may require a design competition and planning and heritage issues dealt with. This may take longer than one year to complete, hence, the need for a rollover earmarked fund, whereby unspent funds in a given financial year would be accumulated to enable large as well as small scale renewable energy projects to be delivered.
31. Solar energy has been highlighted, since reducing grid electricity consumption will deliver the greatest reduction in Greenhouse Gas emissions in the LGA, solar energy is a relatively mature technology whose potential is easily identified and retrofitted and can be rolled out relatively quickly. Wind energy will require wind resource studies before the potential can be identified and roll out delivered. Other renewable energy technologies and/or systems will be identified from the Decentralised (Renewable Energy) Energy Master Plan – which may provide the opportunity to invest in large scale renewables outside the immediate LGA in the future, once the renewable energy potential for the City's buildings has been delivered.

Community Education and Communications

32. Community education and communications would be a key part of a renewable energy program. The selection of early projects should include iconic projects where visible renewable energy projects can be easily viewed by citizens of and visitors to the City of Sydney, including the general public, visitors, business, state, federal and other local government. Such projects are a visible statement of intent by the City of Sydney in delivering its 2030 targets and an example of the 'show by doing' principle.

KEY IMPLICATIONS

Strategic Alignment

33. With sustainability as a central focus, Sustainable Sydney 2030 addresses climate change through the big levers of emissions from buildings, transport and energy generation. This proposal addresses two out of the three big levers and will better utilise an existing funding stream for the implementation of one of the City's main carbon reducing projects on/in its own property and operations on the 'show by doing' principle.

Economic

34. The United Nations report on the development of alternative energy estimates that more than 20 million green energy jobs could be created worldwide by 2030 with the implementation of renewable energy and other alternative energy. For solar photovoltaics alone, 165 new solar energy jobs have been created with the photovoltaics plant in Homebush, and the University of New South Wales was also the first organisation in the world to offer undergraduate training in the area of photovoltaics and solar energy through their School of Photovoltaic and Renewable Energy Engineering. This proposal, therefore, will contribute towards the economic development activity in renewable energy more generally and to the Sydney area more specifically.

BUDGET IMPLICATIONS

35. The City earmarked \$2.495M in the 2009/10 operating budget to procure GreenPower and carbon offsets and a similar amount for future years. It is proposed that:
 - (a) the GreenPower portion in the budget (\$2M) be replaced by a proposed Renewable Energy Fund. This fund would be used to install the City's renewable energy projects; and
 - (b) the carbon offset component (\$0.495M) of the budget be utilised to purchase accredited carbon offsets to ensure the City retains its carbon neutral status. Any annual savings from this budget will be rolled into the Renewable Energy Fund.

CRITICAL DATES AND TIMES

36. The City purchases GreenPower and carbon offsets each financial year based on the amount of emissions it produced in the preceding financial year. A resolution on this proposal will also determine whether it is necessary to continue to tender for GreenPower and offsets or, alternatively, to tender only for accredited carbon offsets for all of the City's emissions, including emissions from grid electricity consumption. As the tender will be for the period ending 30 June 2010, both alternative carbon offset tenders are being progressed at the same time so the City's resolution on this report is not forestalled.

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