

Plan Melbourne
Department of Transport, Planning and Local
Infrastructure
GPO Box 2392
MELBOURNE VIC 3001

06 December 2013

**Clean Energy Finance Corporation Support of Environmental Upgrade
Agreement Finance Referenced in the Victorian State Government's *Plan
Melbourne Metropolitan Planning Strategy***

Dear Sir/Madam

The Clean Energy Finance Corporation (CEFC) is pleased to provide the Victorian State Government the attached detail on Environmental Upgrade Agreement (EUA) finance in response to the EUA reference made within the *Plan Melbourne Metropolitan Planning Strategy* ("Plan Melbourne").

Plan Melbourne, Initiative 5.7.1, has a medium term goal of amending the Local Government Act 1989 to enable Victorian councils outside of City of Melbourne to use EUA finance. This CEFC response is solely focused on that EUA reference and we acknowledge the National Australia Bank Limited ("NAB") submission which has been prepared with the CEFC support which also focuses on the EUA reference within Plan Melbourne. The CEFC has not repeated the key elements of the NAB submission surrounding acceleration of EUA timeframes from a medium to short term goal or establishing a central State EUA facilitator; however we do support those statements and instead focus more on providing a broader market overview which supports the case for rolling out EUAs across the State of Victoria.

EUAs are an innovative mechanism for financing property upgrades to improve their energy or water efficiency, reduce waste and reduce greenhouse gas emissions. They seek to overcome the market barrier which exists between building owners and tenants whereby the party financing an upgrade may not perceive themselves to be the benefactor of the upgrade works.

Low Carbon Australia Limited (now integrated into the CEFC), National Australia Bank (NAB) and the Australia and New Zealand Banking Group (ANZ) are financing EUAs through The Australian Environmental Upgrade Agreement Fund (TAEUF). The CEFC is actively working with additional financiers to expand the EUA offering throughout Australia where legislation permits and leverage private sector investment in the EUA funds.

As such, the CEFC is well placed to work with the Victorian Government to provide an overview of existing market engagement activities across Australia and provide assistance to further investigate the viability of implementing EUAs State-wide, as per the NSW approach.

Attached to this letter are two documents which serve to summarise the CEFC's involvement in existing EUA projects and provide a general market overview:

- **Attachment A** is the Plan Melbourne Submission Form which provides a detailed market overview of EUAs adapted from submissions Low Carbon Australia (and more recently the CEFC) provided to the South Australian Government in July 2012 and more recently in October 2013 in response to their respective consultation processes which were focused on (or made reference to) EUAs.
- **Attachment B** is an EUA factsheet which summarises the CEFC's involvement in this space and provides several project case studies whereby upgrade works were financed via EUAs.

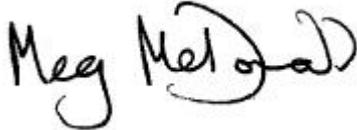
To date the CEFC has had significant market engagement within Victoria on the subject of EUAs through:

- Establishing the EUA fund in response to the City of Melbourne's 1200 Buildings Program which has so far resulted in our organisation co-financing three of the five Melbourne EUAs signed to date, including the first EUA in Australia (123 Queen Street);
- Entering into a Memorandum of Understanding with the City of Melbourne to work collaboratively on EUAs with the council and the Sustainable Melbourne Fund. This work included co-financing and developing a building upgrade tool for building owners and tenants investigating EUA finance;
- Educating Victorian local councils outside of the City of Melbourne about EUA finance and providing guidance on how to determine the feasibility of offering EUAs within their local government areas;
- Engaging with Victorian property investors and developers;
- Engaging with the Victorian representatives of national banks and acting as a conduit between financiers and other interested parties looking to engage on the topic of EUAs; and
- Educating local clean technology solutions providers and broader consulting groups.

The CEFC also liaises with similar stakeholders throughout New South Wales, Queensland, South Australia and Western Australia in the context of EUAs.

The CEFC wishes to continue this engagement with the Victorian Government and if we can be of any further assistance, please contact Mel Cutler, Associate Director of Corporate and Project Finance, at melissa.cutler@cleanenergyfinancecorp.com.au or 07 3188 1641.

Yours sincerely

A handwritten signature in black ink that reads "Meg McDonald". The signature is written in a cursive, flowing style.

Meg McDonald
Chief Operating Officer
Clean Energy Finance Corporation

The Clean Energy Finance Corporation's Submission in Reply to the Victorian State Government's *Plan Melbourne Metropolitan Planning Strategy*

Introduction

The Clean Energy Finance Corporation is pleased to respond to the Victorian State Government's *Plan Melbourne Metropolitan Planning Strategy* ("Plan Melbourne").

About the Clean Energy Finance Corporation

The Clean Energy Finance Corporation (CEFC) has been established by the Australian Government to mobilise capital investment in renewable energy, low-emissions technology and energy efficiency in Australia.

The CEFC's flexible mandate and commercial approach provide an opportunity to achieve genuine market-based change by helping overcome the financial barriers that have previously prevented clean energy investment at scale.

Low Carbon Australia Limited (LCAL), integrated into the CEFC in April 2013, established several Environment Upgrade Agreement (EUA) funds, as detailed in the next section. LCAL was a public company limited by guarantee formed by the Australian Government with initial funding of more than \$100 million and the structure, mandate and capability to be a flexible vehicle for the delivery of finance and other programs aimed at preserving and enhancing the Australian natural environment.

LCAL administered a revolving fund for clean technology finance through its Energy Efficiency Program.

Clean Energy Finance Corporation's Experience in the EUA market

In June 2011 LCAL (now integrated into the CEFC) established an investment fund, The Australian Environmental Upgrade Fund (TAEUF), with National Australia Bank (NAB) and Eureka Funds Management as a special purpose vehicle for providing EUA financing. The first building financed by TAEUF was 123 Queen St Melbourne, announced December 2011.

In March 2013 LCAL (now integrated into the CEFC) replicated TAEUF with the Australia and New Zealand Banking Group Limited (ANZ). The second fund, worth \$10m, was established specifically for the purpose of financing a \$26.5m project generating low-carbon thermal energy supplied by an onsite trigeneration unit in Central Park Sydney. However, the intention is to refinance this fund to enable further projects to be financed via the ANZ facility.

The NAB/EFM/CEFC and ANZ/EFM/CEFC are the primary products commercially available and marketed in all existing or planned Australian EUA jurisdictions (the Sustainable Melbourne Fund is available only within the City of Melbourne and there are some credit unions looking to become involved in their local jurisdictions) - to date this includes:

- City of Melbourne – five EUAs signed to date;
- City of Sydney – two EUAs signed to date ;
- Parramatta City Council – one EUA signed to date;
- North Sydney Council;
- Lake Macquarie City Council;
- City of Newcastle;
- Penrith City Council; and
- Wollongong City Council.

Out of the eight EUAs signed to date, six were funded via TAEUF facilities LCAL participates in. The total aggregated amount of CEFC/LCAL finance committed to these deals is greater than \$15m.

The CEFC is aware of at least another 20 EUA opportunities in the pipeline across NSW, Melbourne and South Australia and that pipeline continues to grow as the CEFC, NAB and EFM market this facility to building owners.

The first EUA financed via TAEUF was in City of Melbourne. 123 Queen Street in many ways represents an excellent case study for the EUA, as the beneficiary of the finance has waived many of the terms which would ordinarily be commercial-in-confidence, via an article appearing in *The Age*.¹ The \$1.5m upgrade included:

- lighting
- double glazing of facade
- installation of a Heating, Ventilation and Air-Conditioning (HVAC) system
- a new building management system with metering so tenants pay for their own actual usage.

This was projected to be a cash-positive investment over a ten year term, generating close to \$35,000 after payments on interest and principal. Further case studies are provided in **Attachment B**.

CEFC's experience is that marketing a new financial product in a time of subdued investment in the property sector and market uncertainty is not easy. Nevertheless, TAEUF has enough prospects in its pipeline for CEFC to be assured at this time that the product is worthwhile continuing to invest in and develop.

The Background to Issues in the Clean Energy Finance Market

The place of the EUA is a potentially important financial tool for dealing with barriers to finance for energy efficiency and clean energy technology. What is clear from existing Australian experience is that the EUA is not a panacea that is going to overcome problems associated with the general economy.

¹ Hopkins, Philip (2012) 'A Retrofit For Going Green in the CBD', *The Age*, 7 March 2012.

A recent survey by AI Group of 300 businesses indicates (unsurprisingly given its limited jurisdictional availability) that 23% of businesses do not know enough about EUA-type finance, and 37% feel such an approach does not meet their business needs. Against this 26% of respondents indicated potential interest in this kind of mechanism.² In CEFC's view this not only shows a market out there for this product, but this is extremely positive result for what is still a relatively new financial concept that is at present only available in a handful of local government jurisdictions in this country.

The EUA is a property-based financial mechanism. Property value is key to most financial decisions around building upgrades in the property sector. It is important because recent years have seen property values decline in Australian markets across the residential, office, retail, industrial and tourist accommodation sectors.³ While fundamentals of most sectors continue to stabilise or improve, investors and financiers remain extremely cautious and sensitive to international developments.⁴

This is for five main reasons:

- Unless they are flush with cash, property owners are going to need to fund the upgrade and the value of the property is going to come into play relative to the quantum of finance when the financier looks to secure their position against the asset.
- Property investors who have financed their acquisition of the property through non-amortising loans (as is typical in the commercial property sector) may require additional equity in the property to maintain loan-to-valuation ratios and covenants.
- Demand is susceptible to general economic conditions: companies are generally risk averse when considering investment in new capital projects whether non-core business or positive business case contributors.
- Property and building ownership can be ancillary to the business models of a business and appropriate experience, skills and resources may not be available to apply to the asset.

² Australian Industry Group (2012) *Energy Shock: Pressure mounts for efficiency action - July 2012*. North Sydney: Australian Industry Group, at p30-1. Note that many businesses selected multiple reasons for not accessing a particular type of government support.

³ ANZ Research (2011) *Australian Property Outlook / 13 December 2011*. Melbourne: ANZ available online at <http://www.anz.com/resources/b/4/b4a8208049796e70ab9bfbfc8cff90cd/Australian-Property-Outlook-December-2011.pdf?CACHEID=b4a8208049796e70ab9bfbfc8cff90cd> accessed 6 July 2012.

⁴ Ibid.

Other financial impediments generally associated with financing otherwise cost effective energy efficiency and greenhouse gas abatement are as follows:

- *Term:* Many clean energy technologies have payback periods in excess of typical corporate funding finance terms (3 to 5 years) or internal capital allocation hurdles which require rates of return commensurate with 3 to 5 year paybacks. A recent survey by the AiGroup found that nearly 60 per cent of businesses would not undertake projects with a payback of 3 years or longer.⁵
- *Availability of funds:* Availability of funds for energy efficiency projects are not primarily driven by the technology type but rather by the credit position of the building owner or industry corporation and the finance market environment.
- *There are other priorities for capital:* Capital may well be available for investment but competing investment needs can displace clean technology as a priority.
- *Complexity and internal decision making* adds to time delays extending project lead times.
- *Transactional cost may be too high* for some businesses.
- *Construction requires long project lead-times* which in turn requires patient capital.
- *Availability of grant funding* places a dampener on demand for loan products.
- *Immaturity of the clean technology market* means there is inherent capacity constraints in terms of both skill and ability to successfully manage projects through to conclusion.

Apart from access to finance, two major barriers to adoption of energy efficient measures within the built environment commercial sector are the information barrier and for the sake of simplicity, what this paper will refer to as 'the landlord-tenant split incentive'. The landlord-tenant split incentive relates to a disconnect between who pays for the Energy Efficiency improvements and who benefits from the reduction in operating (energy and maintenance) costs – this is explained in the diagram below:⁶

⁵ Australian Industry Group (2012) *Energy Shock: Pressure mounts for efficiency action - July 2012*. North Sydney: Australian Industry Group, at 24-25.

⁶ Adapted from Table 17.1 from Garnaut, R (2008) *The Garnaut Climate Change Review: Final Report*. Port Melbourne: Cambridge University Press at p414 citing IEA (2007) *Mind the Gap: Quantifying principal-agent problems in energy efficiency*. Paris: International Energy Agency. © Commonwealth of Australia 2008.

Type of Property	Energy User Pays Energy Bill	Building Owner Pays Energy Bill
Tenanted	Net Lease: Landlord chooses the energy-using equipment for the building but the tenant pays the energy bills. As a result there is little incentive to select or upgrade energy efficient equipment for the landlord as they will not recoup any energy and monetary savings that result (i.e. there is a split incentive).	Gross Lease: Landlord chooses the energy-using equipment for the building and pays the energy bills. There is an incentive on the landlord to select energy efficient equipment to save money but there is no incentive on the tenant to reduce use (i.e. there is a split incentive).
Owner-Occupied	Typical Owner-Occupied: The owner has incentive to reduce both energy use and select energy efficient equipment – there is no split incentive.	Accommodation & Serviced Offices: The owner has an incentive to select energy efficient equipment, but unless energy usage is captured in the price of room hire, there is no incentive on the hirer to reduce energy use (i.e. there is a split incentive).

The information barrier relates to a lack of easy access to adequate information on performance. The efficient adoption of established technologies and practices requires individuals to know:

- the options available
- the approximate costs and benefits of the different options
- how to deploy the options (including hiring experts)
- the cost of investigating the options.

Some of this is caused by market failure. Often these barriers are interlinked, with the effect of strong disincentive to act.

Prospects for EUA uptake across Victoria as a State

In spite of declines from the pre-GFC peak, the World Economic Forum has identified that comparatively stable property values and the concentration of asset financing in the big four banks in Australia provide conditions conducive to uptake of EUA finance.⁷

⁷ World Economic Forum (2011) *A Profitable and Resource Efficient Future: Catalysing Retrofit Finance and Investing in Commercial Real Estate*. Geneva: World Economic Forum at p27.

Within this latter cohort, in 2010 LCAL commissioned research by ClimateWorks which showed that approximately 80% of the emissions emitted from the commercial building sector in 2020 would come from existing building stock.⁸

The following sectoral comments are based on LCAL/CEFC's experience of operating in the EUA market for the past three years:

1. Office Sector

The issue of the tenant/landlord split incentive is well documented, and dealt with above.

To date, much of the Australian policy focus on emissions reduction on existing commercial buildings has focussed on large office buildings which make up 13% of the opportunity⁹ (translating to 4% of the overall built environment emissions opportunity).¹⁰ The experience of Low Carbon Australia and the CEFC of developing and offering finance to catalyse investment in building upgrades has been instructive, with some valuable learnings. The large Australian Real Estate Investment Trusts (A-REITs) are thought unlikely to use EUA finance in the short term as they have taken advantage of this previous policy focus to move most of their stock (typically Premium and A-Grade office towers) to the higher end of National Australian Built Environment Ratings Systems (NABERS) ratings. The really significant opportunity exists in the privately-held and B-D grade office segment and in the Government and community sector. These market segments have their own specific challenges which will need to be addressed to drive uptake:

- The issues in dealing with the privately-held and B-D grade sectors is fragmented ownership, lack of information relevant to/understanding of building owners, a lack of access to capital, and tenant/landlord split incentive (dealt with separately above). The CEFC targets this sector to bridge the information gap and structure finance that is a) repayable through energy savings and b) with tenor to ensure positive or neutral impact on cash flows.
- The issues in dealing with public sector buildings are a) a regulatory environment that typically centralises borrowing control, b) a consequent 'locking out' of finance that could be used to fund upgrades (including CEFC finance), c) competing budget and government financing priorities that serve to 'tie-up' government capital elsewhere. In conjunction, these factors serve to ensure that little is done across the public sector, despite its vast real estate holdings not just in office space, but schools, hospitals, TAFEs, universities, corrective services, emergency services, and other community buildings.

⁸ ClimateWorks Australia (2010) *ClimateWorks Australia's Low Carbon Growth Plan & Commercial buildings emissions reduction opportunities: Report to the Australian Carbon Trust April 2010*.

⁹ ClimateWorks Australia (2010) *Low Carbon Growth Plan for Australia March 2010*. Clayton: ClimateWorks Australia at p63.

¹⁰ By the following formula $n = 100 \times 0.42$ (percentage of commercial buildings) $\times 0.75$ (percentage already existing) $\times 0.13$ (percentage large office space) = 4.095.

2. Retail Sector & Tourist Accommodation & Hospitality Sector

By value, food retailers (grocery and convenience stores), hospitality and service industries and household goods retailers account for 37%, 20%, and 16% of the market share of property in this sector respectively.¹¹ IbisWorld estimates that Australia-wide, the four largest operators accounted for some 13.4% of the property market share of the industry. The remainder of the Retail Property Operators industry is made up of individual investors, property syndicates and smaller property groups and trusts.¹²

The retail sector offers significant investment opportunities for efficiency upgrades and energy cost savings emissions reduction opportunities through solar PV and CHP on-site generation. However realisation of this opportunity in the Retail Sector needs to address the impact of multiple tenancies associated with the property, and the fact of the split-incentive, and depending on whether outgoings may be passed through to individual tenancies under differing lease structures. This leaves the building owner with even less incentive to invest in or consent to upgrades, with the bargaining power of most individual tenants (i.e. non-anchor tenancies) likely to be limited.

Australia wide, according to IbisWorld; 'The hospitality and service group is the second largest retail property market, with approximately 20% of total market share. This segment comprises the cafe, restaurant and takeaway food service groups (11.2% market share) as well as hotels, clubs and pubs (8.3% market share).'¹³ Within this group, in the Tourist Accommodation Sector, hotels function differently to other asset classes, in that typically, the capital value of a hotel is dependent on the business operating within the property more than on the property itself.¹⁴ Operators of the business are quite often not the building owners, and utility costs are passed through to the lessee, leaving the landlord with little incentive to invest in or consent to upgrade outside of those periods where the lease is being renewed or renegotiated. A secondary issue is that, the high end of the accommodation sector is dominated by multinational chains which add to the issues on decision-making around financing options such as EUAs.

Anecdotally, the tourist accommodation sector as a whole is likely to be in more need of upgrades than the office building sector, because accommodation is essentially a location-focussed business. Tenancies therefore tend to be stable, and are not subject to the same competition drivers for 'green tenancies' that exists in the Premium and A Grade office building sector.

The subsectors for which the EUA may most appeal will not necessarily be properties held by larger listed property trusts, but rather smaller trusts who operate on an 'upgrade and sell' model, or the individual owner. The hospitality

¹¹ Stephen, Tim (2012) *IbisWorld Industry Report L7714 – Retail Property Operators in Australia June 2012*. Melbourne: IbisWorld at p14.

¹² Ibid at p18.

¹³ See 10 above.

¹⁴ Tourism Accommodation Australia (NSW) (2012) *Creating a Long Term Future for the Sydney Hotel Industry: Position Paper April 2012*. Sydney: Tourism Accommodation Australia (NSW) at p11.

sector also presents good opportunity, particularly licensed premises with an owner/occupier.

The prospects for EUA finance in the retail and tourist accommodation & hospitality sectors of the property market are again dominated by landlord-tenant split incentive. This points strongly towards the need to ensure no tenant consent is required in these sectors.

3. Industry Sector

Australia wide, according to IbisWorld research,¹⁵ 46.3% of the value in the industrial building sector is tied up in 'warehouses and distribution centres' and another 17% in 'logistics centres'. Another 19.7% are used in manufacturing.

Warehouse, distribution and logistics activities can be divided into two groups – 'energy-intense' – for example refrigerated, other temperature, humidity or biologically-controlled areas or mechanised distribution centres, and 'dry storage' operations.

It is unlikely that there will be much opportunity for comprehensive building upgrades in 'dry storage' as low energy use denies the possibility of large savings based on energy reduction. Simple lighting upgrades, commercial solar PV installations and water savings measures by building owners or occupants (where these buildings have lights and water) would capture most of the opportunity for EUA financing.

The 'energy intense' part of the market will offer more comprehensive upgrade opportunity which could make an EUA model attractive. However, for many manufacturers, energy costs associated with the building may be a relatively low and marginal energy cost input compared to costs of production, thus building upgrades may be well down the list in order of priority.

Ownership in the sector is highly fragmented, 57% of revenue generated in this part of the property market is from leasing, and 43% via property purchase.¹⁶

4. Residential Sector

Based on the above cited ClimateWorks estimates, the residential sector is the largest opportunity in terms of gross emissions. However, increases in the sector are already more than offset by the Renewable Energy Target (RET), and the sector is expected to continue on a trajectory of decreased carbon intensity driven by household-targeting energy efficiency and solar schemes and increased product and appliance standards.¹⁷ ClimateWorks estimates 6Mt of emissions reduction opportunity in the sector, particularly in improvement to

¹⁵ Schulman, Craig (2012) *IbisWorld Industry Report L7715 – Industrial and Other Property and Developers in Australia March 2012*. Melbourne: IbisWorld at p13.

¹⁶ Ibid at pp13, 18.

¹⁷ ClimateWorks Australia (2010) *Low Carbon Growth Plan for Australia March 2010*. Clayton: ClimateWorks Australia at p63-4.

standards of new house shells.¹⁸ A further unsubstantiated portion would be state-owned public housing which does not need an EUA-type mechanism.

A good portion of this sector is comprised of medium and higher density housing, much of which is comprised of buildings held in a scheme of group or community title (e.g. body corporates). As most government schemes are directed at households, this leaves substantial emissions reduction opportunity in building common areas, for example, common lighting; elevators; water use, capture and storage; water heaters and boilers (including solar), solar generation filters, pumps and heating for pool, spa and sauna areas; and heating ventilation and air-conditioning (HVAC) systems. EUA finance is well suited to upgrading these types of facilities (particularly if the repayments can be matched to energy savings) as the debt is secured against the property reducing the risks of split ownership. This is also an area of the residential sector that the CEFC can invest in, and the CEFC would be interested in working with the Victorian State Government to target larger, energy intense complexes of this type.

EUAs are not broadly applicable to stand alone dwellings in either Victoria or NSW.

The Australian form of EUAs was originally inspired by the Property Assessed Clean Energy (PACE) model adopted for the residential sector in the US. However, it is important to understand that the EUA is not simply PACE finance by another name – usually an essential part of the PACE model involves the municipality or state issuing bonds to finance the building upgrades.¹⁹ The bonds aspect of the PACE model is threefold:

- It entwines property values into the calculation of state and municipal liabilities, and the residential property market in the US has until recently been in freefall,
- State and municipal finances in the US have recently separately been under pressure (mostly due to excessive pension liabilities),²⁰ limiting their capacity to take on PACE bonds, and
- Municipalities in Australia typically cannot issue bonds.

Whether or not a rates-like charge (i.e. the EUA) can be applied lawfully in the regulated environment of residential tenancies is another factor to be considered. Section 54N of the NSW EUA legislation acts to override section 40 of the *Residential Tenancies Act 2010* (NSW) and (any regulations made under that Act) to allow the EUA charge to be passed through.

It would be open to the Victorian State Government to include the unattached dwelling sub-sector in design of any EUA scheme as it may become economic for financiers to target this sub-sector for EUA finance in the future (for example, by mortgagee banks selling 'green renovation' products to those of their customers

¹⁸ Ibid.

¹⁹ PaceNow (2012) *PaceNow* <<http://pacenow.org/blog/about-pace/>> (website), accessed 10 July 2012; Fuller, Mariann C.; Kunkel, Cathy & Kammen, Daniel M. (2009) *Guide to Energy Efficiency & Renewable Energy Financing Districts For Local Governments*, September 2009. Renewable and Appropriate Energy Laboratory (RAEL), University of California, Berkeley.

²⁰ (2012) 'Public Sector Pensions: Burning fast', *The Economist*, 23 June 2012.

with a high level of equity in their home). A more cautious approach would be to test the engagement of the residential sector by allowing the EUA in multiple unit dwellings as in NSW.

5. Solar

The small scale solar photovoltaic (PV) market is material (>500MW) and no longer subsidy driven. Solar as a technology is well suited to the EUA product given EUA finance offers a longer term (out to 10 years) which is better aligned to the payback for this technology.

The solar PV uptake in Australia to date has been largely residential but commercial and industrial is also growing. Daytime commercial load such as in office, retail and industry generally matches well to PV generation. Load is also unlikely to be the limiting factor to PV capacity in most commercial situations. Limitations are likely to be either roof space or connection/approval issues.

The small scale solar market is rapidly evolving in terms of delivery options with a high level of customer confusion around finance offers. This presents an opportunity to provide credibility to quality market offerings which the EUA structure could be created to help drive uptake.

CEFC involvement would be designed to accelerate uptake and develop new segments of the market and structures suitable for EUAs.

We note recent market developments whereby large global corporates like IKEA and Walmart have committed to install solar PV on their building stock which is reflective of Australian trends also, but which could be catalysed by wider availability and promotion of suitably streamlined structured EUAs, including finance.

6. Precinct Cooling & Distributed Generation

Another potential application for the EUA mechanism is in the area of precinct cooling and distributed generation. District tri-generation and cogeneration involves construction of gas fired generators scaled at a size to deliver a specific power output as well as providing buildings and industries with heat and cooling.

District or precinct-level systems are still in their infancy in Australia, but a number of proposals are starting to take shape.

The proposed City of Sydney tri-generation projects involve multiple gas fired generators (330MW total) at zoned sites to supply electricity to neighbouring buildings via connections to the electricity grid. Water piping infrastructure will be built connecting the generation building to district buildings. Waste heat will be used to heat water, which is piped to the district buildings for heating and cooling demands. The size and scale of the projects provides increased efficiency in the savings.

Similarly such precinct level projects involve a renewable fuel source and/or utilise renewable energy towards either a cogeneration or trigeneration process. A cogeneration plant in Townsville is fuelled by biogas produced through

anaerobic digestion - essentially this fuel is produced through the treatment of sewerage. The gas that is supplied by the digester is then used in the 332 kW generators to provide a significant portion of the surrounding area's base load power needs. This precinct level cogeneration process will abate 700 tCO₂e per year.

Because the EUA mechanism is tied to property, this method of finance could eventually be used to support precinct-level environmental upgrades to heating, cooling and power generation. An example of where State governments could assist is by piloting such schemes in 'natural' government or quasi-government precincts, for example university and hospital campuses or government administrative centres.

[ENDS]