EMRC

Advancing Perth's Eastern Region

Carbon Pricing – Impacts for Local Government

Issues Paper
July 2011

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1. Executive Summary

Australia stands to be the developed country most affected by climate change if global mitigation efforts fail. Australia has committed domestically and internationally to do its fair share to limit global warming to 2℃ above pre-indu strial levels and reduce carbon pollution by between 5% - 25% below 2000 levels by 2020. Setting a carbon price effectively places a dollar value on the cost of the impacts of climate change caused by carbon pollution.

Local government is in the unenviable position of bearing the burden of adaptation to the possible risks and consequences of climate change on both corporate and community levels, as well as being subject to costs associated with mitigation efforts, the pricing of carbon pollution, and increasing energy prices. Local government is also well placed to take advantage of opportunities that will arise out of a broad economic reform such as the Gillard Government is proposing.

On 10 July 2011, the Federal Government revealed preliminary details of the 'package' surrounding the introduction of a carbon price mechanism, including proposed assistance to households and trade-exposed industries - the Clean Energy Plan. Legislation to enact the Plan is likely to be introduced into Parliament in the coming months. Key features of the proposed carbon price include:

- Around 60 per cent of Australia's carbon pollution will be covered by the carbon price, including pollution from electricity generation, stationary energy, some business transport, waste, industrial processes, and fugitive emissions.
- Liable businesses will need to buy and surrender to the Government a permit for every tonne of pollution they produce, which will affect around 500 businesses.
- A carbon price will not apply to agricultural emissions.
- A carbon price will not apply to fuel for households and light commercial vehicles.
- There will be two stages. For the first three years, the price for each tonne of pollution will be fixed, starting at $23 per tonne of CO_2-e. Then, from 1 July 2015, the carbon pricing mechanism will transition to a 'cap and trade' emissions trading scheme. In this second 'flexible price' stage, the carbon price will be set by the market.

The key risks to local government of a price on carbon are financial. "Pass-on" costs from the businesses paying the carbon price are likely to result in increased energy costs; increased waste management costs; and increased building costs for materials. The obvious benefits of an effective price on carbon are environmental. The price signals should cause a behaviour shift to lower emissions, reducing carbon pollution.

The cost impact of carbon pricing on local government, without considering the impact on waste management, will be comparatively modest - around one third of the economic impact of the introduction of the Goods and Services Tax (GST). Energy increases in the region of 10% in the first year, building cost increases of around 2% overall, and rises in the cost of consumables of around 2% are the figures being projected by a number of different economic models. Fuel for households and light commercial vehicles will be unaffected. To put this in perspective, the cost of electricity in WA has risen over 20% in the last 12 months alone, so the increase caused by the carbon price is significant, but not unbearable. However, this increase combined with ongoing State Government increases may be a cause for concern for local government.

In real terms, what this means for local government is that the projected "pass-on" costs from the businesses paying the carbon price will be able to be offset to a large extent by

implementing mitigation actions such as energy efficiency upgrades to air conditioning, lighting and water heating. Encouraging behaviour change through education and support programs can increase the benefits realised.

There are a number of opportunities which are, or will be, available to local government to reduce the impact of a carbon price, or to assist with the transition to a low carbon economy, both through the Federal Government and the Eastern Metropolitan Regional Council (EMRC).

Implementing energy efficiency and other mitigation actions early will realise both social and economic benefits to local government.

There are a number of projects and programs currently being undertaken by the EMRC which support local government with energy and water efficiency initiatives, and climate change adaptation planning, such as:

- Achieving Carbon Emissions Reduction (ACER) Program;
- Perth Solar City;
- Future Proofing Perth's Eastern Region - Climate Change Adaptation;
- Water Campaign;
- Water Audits; and
- Energy Audits.

2. Introduction

Climate change and its associated risks, benefits, costs and mitigation has become one of the single biggest discussion points of recent times, both scientifically and politically.

Local government will need to adapt to the possible risks and consequences of climate change on both corporate and community levels, as well as being subject to costs associated with mitigation efforts, the pricing of carbon pollution, and increasing energy prices.

Local government is also well placed to take advantage of opportunities that will arise out of a broad economic reform such as the current Gillard government is proposing. There will be opportunities for local government to reform strategies and policies; to invest in energy efficiency in advance of rising energy prices; to plan for new employment and investment in the green technology sector; and to seek funding from the new sources which will become available as the reform gains impetus.

This paper seeks to provide some clarification and understanding of the reasons behind pricing carbon, the structure of the carbon pricing mechanism proposed, and the possible impacts and opportunities that a price on carbon will have on local government.

3. Background

3.1. The science behind a price on carbon

Over the last 800,000 years, the amount of carbon dioxide in the atmosphere has varied between approximately 172 and 300 parts per million (ppm). Since industrialisation, carbon dioxide levels have risen sharply to about 386 ppm. Even in these amounts, the extra carbon dioxide is largely responsible for the increase in global temperatures of about 0.7℃. (DCCEE)

The human emission of carbon dioxide and other greenhouse gases into the atmosphere is referred to as carbon pollution. Australia stands to be the developed country most affected by climate change if global mitigation efforts fail to hold global temperature increase to 2℃ above pre-industrial levels. (*Climate Change Review*, Garnaut)

Globally, 2010 was the warmest year on record. The decade from 2001 to 2010 was the warmest decade on record. In Australia, each decade since the 1940s has been warmer than the preceding decade. (BOM)

Some of the key impacts already being observed in Australia include:

- In the last 50 years the number of record hot days in Australia has more than doubled. This has increased the risk of heatwaves and associated deaths, as well as extreme bush fire weather in South Eastern and South Western Australia.

- Sea level has risen by 20 cm globally since the late 1800s, impacting many coastal communities. Another 20 cm increase by 2050, which is likely at current projections, would more than double the risk of coastal flooding. (*The Critical Decade*, Climate Commission)

Climate projections for Western Australia that have been modelled under a range of Intergovernmental Panel on Climate Change (IPCC) scenarios have suggested that:

- By 2030, rainfall will decrease by 2 to 20 per cent;
- By 2030, summer temperatures will increase by 0.5 to 2.1℃;
- By 2070, rainfall will decrease by 5 to 60 per cent; and
- By 2070, summer temperatures will increase by 1.0 to 6.5℃. (DEC, IOCI)

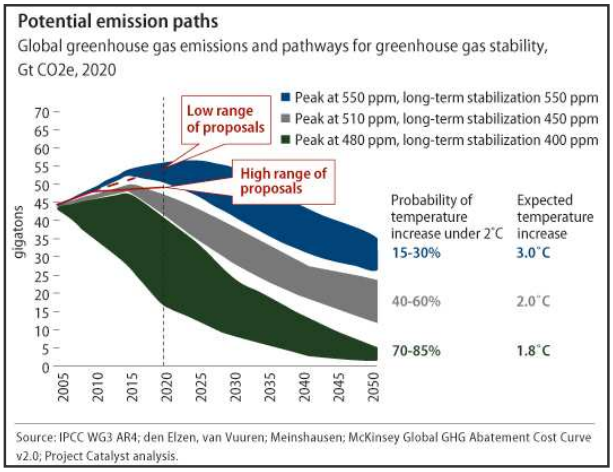
3.2. History of carbon pricing policy

The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty agreed in 1992 with the goal of preventing dangerous human interference with the climate system. The Kyoto Protocol builds on the UNFCCC, and sets legally binding targets for 37 industrialised countries and the European community for reducing greenhouse gas emissions. Australia signed the Kyoto Protocol in December 2007 and committed to limit greenhouse gas emissions over the first commitment period (2008 - 2012) to 108 per cent of the levels they were in 1990.

During the past 5 years in Australia, much research and discussion has been undertaken regarding the reduction of greenhouse gas emissions. Various mechanisms for dealing with emissions have been developed, but as yet, none have been implemented. These have

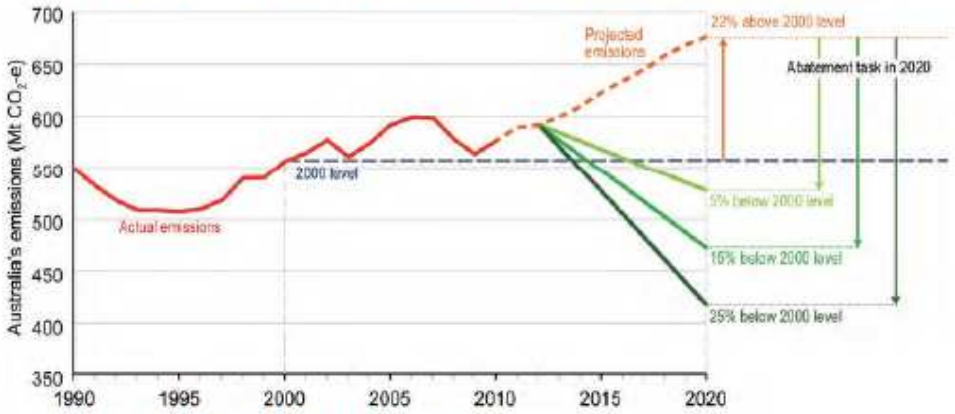
included an Emissions Trading Scheme in 2006, the Shergold Report in 2007, and the Rudd Government's Carbon Pollution Reduction Scheme (CPRS) in 2009.

The Copenhagen Accord, which emerged from the December 2009 Conference of the Parties to the United Nations Framework Convention on Climate Change, included an objective of restricting the increase in global temperature to below 2℃ above pre-industrial levels. That target equates to total global carbon emissions of 450 – 550 ppm, which is the range agreed to be the most likely to restrict global temperature increase to 2℃ (see IPCC *Potential emission paths* graph, right). This objective was formally accepted as a goal of the United Nations at Cancun in December 2010.



Australia has committed domestically and internationally to do its fair share to limit global warming to 2℃ above pre-industrial levels and redu ce pollution by between 5% - 25% below 2000 levels by 2020 (UNFCC commitment. See *Figure 2.4: Projected growth in emissions and the abatement challenge* graph below). This has bipartisan support from all major political parties in Australia. As part of the Cancun Agreements in 2010, the Government has also agreed to review the agreed long-term goal towards strengthening it to 1.5℃. This review will be completed by 2015.

Figure 2.4: Projected growth in emissions and the abatement challenge



Source: Treasury modelling, 2011 (medium global action scenario).

Around the world countries are acting to reduce their carbon pollution. Collaboration, particularly through the United Nations, is growing. To date, the UNFCC has 195 signatories. Through various international protocols and agreements, 89 countries have pledged to limit their emissions. These countries account for over 80% of global emissions and over 90% of the global economy.

The Productivity Commission recently released a report showing that most of Australia's top trading partners - China, Germany, Japan, New Zealand, South Korea, the United Kingdom and the United States - had adopted major policies to reduce pollution and support the move to clean energy. The Productivity Commission noted that many of these countries are

planning further action on climate change and carbon pricing and/or trading policies featured prominently.

Considered economically, climate change can be understood as a form of market failure associated with carbon pollution because the climate change associated with that pollution imposes costs on all people, not just the polluters. (The Australia Institute) The economic reform brought about by pricing carbon seeks to rectify this market failure by providing incentives (and disincentives) to bring about behaviour change which will reduce the pollution.

Setting a carbon price effectively places a dollar value on the cost of the impacts of climate change caused by carbon pollution. This is also known as the social cost of carbon. Estimates of the social cost of carbon are highly uncertain. Estimates of the social cost of carbon in relevant literature for 2005 had an average value of AUD $57 tonne CO_2-e with a standard deviation of AUD $111 tonne CO_2-e. Research has indicated that the wide range of estimates can be explained by underlying uncertainties in the science of climate change, different choices of discount rate, different valuations of economic and non-economic impacts, treatment of equity, and how potential catastrophic impacts are estimated. (Wikipedia)

3.3. Announcement of a price on carbon

In 2010, following the last Federal election, the Australian Greens and the Labor Party signed a memorandum of understanding (MOU) to ensure stability for Labor in Government. The MOU covered a number of points, including an agreement on climate change policy which states that "…reducing carbon pollution by 2020 will require a price on carbon."

The establishment of a Multi-Party Climate Change Committee (MPCCC) was advised on 27 September 2010. The MPCCC was set up to explore options for the implementation of a carbon price and to build consensus on how Australia will tackle the challenge of climate change.

On 24 February 2011, the Gillard Government announced its intention of implementing a carbon price by 1 July 2012 and unveiled the framework for a carbon price mechanism being considered by the MPCCC. Following the announcement, on 1 March 2011, the Prime Minister explained the way a carbon price works:

> "Let me explain in detail our mechanism for pricing carbon. The first proposition is an incredibly simple one. At the moment carbon pollution can be released into the atmosphere for free. There is no disincentive for doing that. We will put a price on carbon, a price on every unit of carbon pollution. It will be paid for by businesses and as a result, because our business community is smart and adaptable and innovative, they will work out ways of pursuing their business and generating less carbon pollution. They will work out ways of making sure they pay less of a price when carbon is priced.
>
> Then they will enter into contracts, they will make investments on the basis of understanding the rules and understanding that carbon will be priced. And as they go about making those transitions, innovating, making the new investments of the future, we will work with those businesses in transition to a clean economy.
>
> Having priced carbon and seen that innovation, yes, there will be pricing impacts; that is absolutely right. That is the whole point: to make goods that are generated with more carbon pollution relatively more expensive than goods that are generated with less carbon pollution. But because we are a Labour government this will be done in a fair way. We will assist households as we transition with this new carbon price.

> What that means is that people will walk into a shop with money in their pocket, the government having provided them with assistance. They will see the price signals on the shelves in front of them—things with less pollution, less expensive; things with more pollution, more expensive—and they too will adapt and change. They will choose the lower pollution products, which is exactly what we want them to do. Between the business investment and innovation, between households who have been assisted in a fair way by a Labour government responding to price signals, we will see a transition to a cleaner economy, to a low-pollution economy." (Grog's Gamut)

An intense public, political and media debate ensued following the announcement. Many referred to it as a "carbon tax" due to the nature of the fixed price phase. Some consultation regarding the final structure of a carbon price mechanism was then undertaken with industry, the community, the Greens and the independent MPs (who will ensure the passage of legislation through the parliament). The MPCCC also considered much of the work and consultation which was carried out previously relating to the CPRS, as well as referring to the Garnaut Climate Change Review and Update, and other, more recent, reports.

On 10 July 2011, the Government revealed details of the 'package' surrounding the introduction of a carbon price mechanism, including proposed assistance to households and trade-exposed industries. The Clean Energy Plan was released in a wide-ranging media campaign, a new website, various documents, fact sheets and information.

What was, initially, a 'carbon price mechanism' has become the Australian Government's Climate Change Plan, *Securing a clean energy future*, complete with tax reform, independent governance bodies, permits and a price on carbon.

4. Carbon pricing - how it's going to work

The MPCCC Clean Energy Agreement underpins the Government's Clean Energy Plan and outlines the key elements of the package. As part of the Clean Energy Plan, the Government proposes the introduction of a carbon pricing mechanism from 1 July 2012. If the appropriate legislation is enacted by Parliament, from that date, large polluters will report on their emissions and buy and surrender to the Government a carbon permit at a price for every tonne of carbon pollution they produce.

4.1. Key features of the carbon price

- Around 60 per cent of Australia's carbon pollution will be covered by a carbon price, including pollution from electricity generation, stationary energy, some business transport, waste, industrial processes, and fugitive emissions.
- Liable businesses will need to buy and surrender to the Government a permit for every tonne of pollution they produce. Around 500 business entities meet the coverage threshold.
- A carbon price will not apply to agricultural emissions.
- A carbon price will not apply to fuels for households and light commercial vehicles.
- Households, smaller businesses and farmers will have no direct obligations under the carbon price.
- The carbon pricing mechanism will be in two stages. For the first three years, the 'fixed price' period, the price for each tonne of pollution has been set. Then, from 1 July

2015, the carbon pricing mechanism will transition to a 'cap and trade' emissions trading scheme. In this second 'flexible price' stage, the carbon price will be set by the market.

- The carbon price has been set for the first three years, starting at $23 per tonne of CO_2-e and increasing by 2.5% per year during the fixed price period.
- In the set price period, as many carbon permits as businesses require to meet their obligations will be available at the set price.
- For the first three years of the flexible price period, a price ceiling and a price floor will apply. The price will be determined by the market. Businesses will compete to buy the number of permits they need to meet their obligations.
- In the flexible price period, the number of permits issued by the Government each year will be limited by a cap on annual carbon pollution.

4.2. Further features of the clean energy plan

- Scope for linking to international carbon markets and land abatement programs;
- Creation of an independent body, the Climate Change Authority, to track Australia's pollution levels and provide independent advice to the Government on the performance of the carbon price and other initiatives;
- Household assistance measures to support low and middle income households and to support energy efficiency improvements in households to reduce energy costs;
- Business assistance measures to support jobs and competitiveness and support investment in the business sector to increase energy efficiency and reduce carbon pollution;
- Measures to support an orderly transition of the energy sector and underpin energy security;

- Enhanced support for innovation in low emissions and renewable technologies through the establishment of the Clean Energy Finance Corporation; and the consolidation of existing renewable technology support measures into the Australian Renewable Energy Agency;
- Commitments to regional and rural communities through land measures which will support participation in the Carbon Farming Initiative; provide incentives for land sector projects that deliver biodiversity and other additional environmental benefits; and support regional planning and skills development.

4.3. Coverage of the carbon price

- The carbon price will have broad coverage from commencement encompassing: stationary energy generation; most business transport emissions; industrial processes; non legacy waste; and fugitive emissions (other than from decommissioned coal mines).
- The coverage of the carbon price mechanism will be brought into effect as follows (summarised):
  - Emission sources will generally be covered by applying liability to facilities that have Scope 1 greenhouse gas emissions of 25,000 tonnes of CO_2-e a year or more.

  - An additional threshold of 10,000 tonnes of CO_2-e will apply to landfill facilities within a prescribed distance of large landfill facilities to address concerns about displacement of waste from covered to non-covered landfills.
  - Retailers of natural gas will be liable for emissions arising from the use of the fuels they supply to customers, with some flexibility to transfer liabilities to facilities.
  - A carbon price will not be applied to transport fuels (including diesel, petrol, LPG, CNG and LNG) used by cars, light commercial vehicles, agriculture, forestry and fishery activities.
- Agricultural and land sector emissions will not be covered under the carbon pricing mechanism.
  - The Carbon Farming Initiative will provide a source of eligible offset credits for the carbon price mechanism and so help unlock the potential for land sector abatement.

5. Risks and benefits of a price on carbon

The risks associated with climate change for Perth's Eastern Region have been set out in detail in the Eastern Metropolitan Regional Council (EMRC) Regional Climate Change Adaptation Action Plan (RCCAAP). As noted in the RCCAAP:

> Climate change represents a huge challenge for Local Government, including impacts on infrastructure, land use planning, biodiversity, environmental health, fire and emergency services as well as parks and reserve management. Other broader key risks include the potential for changing economic viability of local industries and social dislocation.
>
> Climate change can also present new opportunities whereby action taken to adapt will generate significant social and environmental benefits and this will lead to more vibrant and resilient societies. Climate change brings forth immense opportunities for building a new economy and if done well Perth's Eastern Region could position itself as an economic hub for the Perth's Metropolitan area and this in turn will bring wealth and prosperity to the Region. Opportunities for new emerging industry can include developing leading edge sustainable agriculture systems in the region, becoming a leader in water management technology, attracting renewable energy and 'clean tech' sector businesses and jobs, and setting up and attracting biotechnology research companies to the Region.
>
> Mitigation continues to form a component of adaptation as it is only through continuing the commitment to reducing carbon emissions that climate change trends can be slowed or even halted.

The risks of climate change remain part of the associated risks of a price on carbon as the reforms proposed by the government may not have the desired impact on Australia's carbon emissions, and the global mitigation effort may fail to restrict the temperature increase to 2℃ above pre-industrial levels.

However, as the Clean Energy Plan proposed by the Gillard Government is fundamentally an economic rather than environmental reform; the risks of a price on carbon are predominantly economic.

5.1. Risks to local government

The key risks to local government of a price on carbon are financial. "Pass-on" costs from the businesses paying the carbon price are likely to result in:

- Increased energy costs;
- Increased waste management costs;
- Increased building costs for materials;
- Increased financial requirements for general purchasing;
- Reduced ability to complete capital projects if there are constraints on the capacity to raise rates or other income; and
- Increased service charges as other businesses cope with their increased overheads.

Other social and economic risks that local government may need to consider will include:

- Increased need for community education and support;
- Changing service needs for the community;
- Increased incidence of rate payment default as households struggle to cope with their own increased living costs; and
- Potential contractions in some existing industries that are dependent on high energy or water inputs, or on existing climatic conditions, resulting in job losses and a change in business investment in local areas.

5.2. Benefits to local government

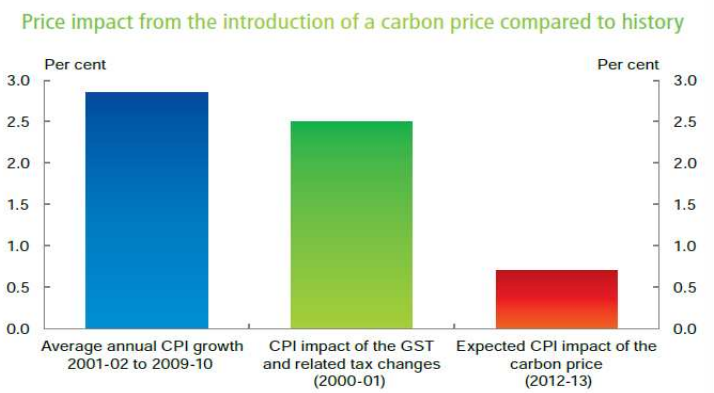
The obvious benefits of an effective price on carbon are environmental. The price signals should cause a behaviour shift to lower emissions, reducing carbon pollution, which in turn should assist the global effort to restrict temperature increase to 2℃ above pre-industrial levels. This will limit the impact of climate change on the environment, local government and communities.

As with the risks, the other benefits to local government of a price on carbon are economic and social. These will include:

- Incentives to implement energy, water and fuel efficiency initiatives that reduce operating costs;
- Incentives to reform strategies and services to assist the transition to a low carbon economy;
- New business opportunities;
- Increased employment in 'clean technology' or 'green sector' jobs;
- New capital funding opportunities; and
- More sustainable and resilient communities.

6. What this means for local government - the likely impact

Contrary to the media hype surrounding the carbon price, research and modelling suggests that the impact of the carbon price will be modest - around one third of the economic impact of the introduction of the Goods and Services Tax (GST). This has been reiterated by the Government in the Clean Energy Plan (see *Price impact from the introduction of a carbon price compared to history* graph below).



Large increases in the cost of electricity, gas and fuel over the past few years have had a much greater impact on operating costs for local government than the projected increases from the carbon price are likely to have.

In real terms, what this means for local government is that the projected "pass-on" costs from the businesses paying the carbon price will be able to be offset to a large extent by implementing mitigation measures such as energy efficiency upgrades. This is discussed in more detail below.

6.1. Energy

The cost of electricity has risen 47.5% over the past 3 years for Perth domestic consumers (over 50% for Perth consumers on contestable tariffs), and the cost of gas has risen around 30% for Perth consumers over the same period. The State Government has indicated that the cost of energy will continue to rise regardless of a price on carbon, reflecting a move towards cost-reflectivity and the reduction of Government subsidies. (Office of Energy)

The main cause of the recent price increases has been rising costs of transmitting and distributing electricity due to increased investment in the transmission and distribution networks and increased maintenance costs. This investment is likely to continue as aging networks are upgraded to newer technology to cope with peak demand and the introduction of renewable energy into the mix.

Pricing carbon will affect the price of electricity by increasing the cost of generating power. The major electricity generating companies are amongst the biggest carbon polluters in the economy, so they will pay the carbon price and much of this will be passed on to consumers. Across Australia, the carbon price is expected to increase electricity prices by 10 per cent on average in 2012-13.

To put this in perspective, the cost of electricity in WA has risen over 20% in the last 12 months alone, so the increase caused by the carbon price is significant, but not unbearable. However, this increase combined with ongoing State Government increases may be a cause for concern for local government.

6.2. Consumables

The impact of a carbon price on consumables such as food, paper products, kitchen products, stationery and other materials is likely to be quite low. The agricultural sector has been excluded from paying a carbon price, so the main effects will be from the energy input into production and sale of consumables.

Independent research as well as government modelling has indicated that an overall price increase of around 1% to 2% is likely in 2012-13 (see *Carbon price impact on food prices* below).

Carbon price impact on food prices

6.3. Building

As many materials associated with building will be directly affected by the carbon price, the impact of a carbon price on building costs is likely to cause an overall price increase of around 2%.

The Master Builders Association's modelling indicates that the cost of metals - from aluminium windows to structural steel and Colorbond roofs - will rise by between 2 and 4 per cent. Mineral-based products such as concrete and bricks will rise around 3% to 6% on average, and timber will rise by about 1.5%. Insulation prices are also expected to go up. (*Materials hike will add $5000 to home price*, Sarah Danckert, The Australian online)

6.4. Fuel

A carbon price will not apply to light on-road commercial vehicles. This means that any increases in the cost of fuel will be from the fuel companies rather than an impact of the carbon price.

It is worth noting, however, that the retail cost of fuel increased by 60 cents to around $1.70 per litre in mid-2008, and has fluctuated between around $1.25 and $1.50 per litre since that time. Some experts are predicting that the retail cost will increase to $2.00 per litre in the near future.

6.5. Waste

It is not yet clear the impact that a carbon price will have on the cost and operations of waste management for local government.

The Australian Local Government Association (ALGA) notes that further market modelling and negotiations are needed before the full impact of the carbon price mechanism can be determined. In a recent press release, ALGA President, Genia McCaffery, has said, "It is clear that waste management will cost more. Waste is covered by the scheme but legacy waste is excluded. Determining how to measure carbon pollution from waste, such as emissions from landfills, is not so clear."

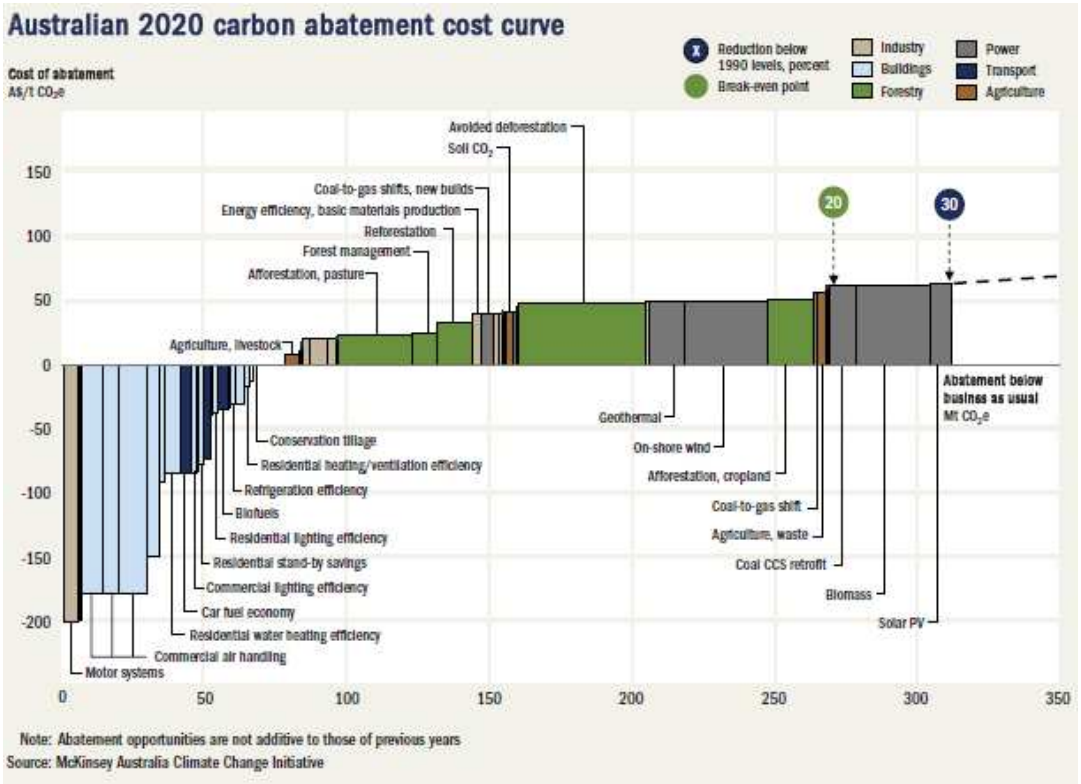
"We are concerned that there appears to be no standard method for measuring emissions from landfills and estimation methods are unreliable. Also, the costs of waste-related pollution will have to be met by landfill operators including many local councils, which will then ultimately need to be passed on to ratepayers," Ms McCaffery said.

ALGA will be working with the Government to attempt to resolve the technical issues surrounding waste-related pollution and provide local councils with a better understanding of their obligations and how best to manage carbon pricing and energy efficiency. (*Carbon pricing will affect councils and ratepayers*, ALGA News)

7. Abatement - how to reduce the impact

An Australian 2020 carbon abatement cost curve based on analysis of the costs and abatement potential of more than 100 abatement measures across six industry sectors prepared in 2008 (see below) shows that some abatement actions are economically beneficial - that is, they have a negative abatement cost. (*An Australian Cost Curve for Greenhouse Gas Reduction*, McKinsey & Company) This is the "low hanging fruit" which is easiest to "pick". As a general rule, initially the costs of abatement are low, and the cost increases with the level of emissions reduction required, i.e. the marginal (or additional) cost of abatement increases. (*Teaching Climate Change*, The Australia Institute)

Many abatement actions which are economically beneficial - that is, they will ultimately reduce operating costs as well as reducing emissions - are able to be undertaken by local government. Energy efficiency measures such as upgrades to air conditioning, lighting and water heating will reduce the impact of a carbon price by reducing consumption.



7.1. Energy efficiency measures

Upgrading aging appliances and fittings such as air conditioners, refrigerators and light fittings can significantly reduce energy consumption and operating costs. Appliances over 10 years old will typically use twice as much electricity as newer, energy efficient, models.

The best air conditioners on the market are twice as efficient as the minimum standard, and three times as efficient as older units. Air conditioners with a programmable thermostat (set point) allow the temperature in a room or office to rise steadily, helping the air conditioner to consume less power. Energy Saving Modules (ESMs) on air conditioners can ensure that the compressors work at maximum efficiency while maintaining existing temperature set points.

Lighting is often a large component of energy use in a building. Compact fluorescent lights use up to 75% less energy than traditional incandescent bulbs and may last 6 to 10 times longer. Commercial energy efficient metal halide lamps and ballasts can reduce energy consumption by 25% over older types. Refurbishing dichroic light fittings by installing new energy saving LED lamps and transformers may reduce energy consumption by up to 85%. Installing movement sensors in rooms with variable traffic can also reduce consumption.

Street lighting accounts for a large proportion of local government spend on electricity, and emissions produced from energy consumption. Many new energy efficient street lighting technologies are being trialled around Australia with energy savings projections of around 40 - 60%.

Local government is encouraged to invest in software (internal or external/online) which allows them to monitor energy use and emissions. This will allow analysis of data to identify high energy consuming buildings to target for energy efficiency initiatives. An energy audit of a building will investigate energy-using hardware, fixtures, equipment, and management practices to determine the efficiency of energy use and recommend a range of practical and cost effective measures for reducing consumption.

7.2. Fuel efficiency measures

Although fuel for light vehicles will not attract a carbon price, the cost of fuel has risen dramatically over the past few years, and is expected to continue rising. Converting older fleet vehicles to more energy efficient models, or to hybrid vehicles, will reduce fuel costs as well as carbon emissions.

7.3. Behaviour change

One key mitigation action that is often overlooked as it is not easily quantified is behaviour change, both within a local government and in the community.

Education programs can raise awareness of consumption and change personal habits. With sufficient support, corporate and community culture can change significantly in the transition to a low carbon economy.

Raising staff awareness regarding the impact of energy consumption and waste production can bring about measurable reductions. Education and support programs are often more successful when run in conjunction with other efficiency measures, such as building upgrades, to highlight both corporate and personal responsibility.

8. Opportunities, Funding and Support

There are a number of opportunities which are, or will be, available to local government to support energy efficiency measures to reduce the possible impact of a carbon price, or to assist with the transition to a low carbon economy.

8.1. Low Carbon Communities

The Department of Climate Change and Energy Efficiency (DCCEE) Low Carbon Communities program has been significantly expanded in the new plan to promote energy efficiency at a local level and among low income households. Funding for Low Carbon Communities will be increased from $80 million to $330 million and will now be delivered through three funding streams:

- the **$200 million Low Carbon Communities** program will provide competitive grants to local councils and community organisations to support energy efficiency upgrades to council and community-use buildings, facilities and lighting;
- the **$100 million Low Income Energy Efficiency Program** will support consortia of local councils, community organisations and energy service companies to trial energy efficiency approaches that assist low income households to reduce their energy costs; and
- the **$30 million Household Energy and Financial Sustainability Scheme** will support low income households to improve their energy and financial sustainability. [Note: this scheme will be administered by the Department of Families, Housing, Community Services and Indigenous Affairs].

8.2. Low Carbon Australia

Low Carbon Australia Pty Ltd was established by the Federal Government as an independent company with over $100 million initial funding. Low Carbon Australia provides financial solutions and advice to Australian business, government and the wider community to encourage action on energy efficiency, cost-effective carbon reductions, and accreditation for carbon neutral products and organisations.

Low Carbon Australia works collaboratively in consultation with business and public sector organisations, to develop, co-design and co-deliver energy efficiency finance solutions and facilitating the transition to a truly low carbon economy. Low Carbon Australia focuses on projects with high demonstration value in order to catalyse wider investment. It prioritises projects which leverage additional private-sector finance and are scalable, replicable and adaptable.

The Energy Efficiency Program has funding of $87.6 million and will make co-investments to stimulate private sector investment in projects for energy efficiency retrofits of existing buildings, seeking a positive return on its investments and addressing traditional barriers and market failures in implementing energy efficiency improvements.

8.3. National Carbon Offset Standard

The Federal Government introduced the National Carbon Offset Standard (NCOS) on 1 July 2010 to provide national consistency and consumer confidence in the voluntary carbon market. The standard serves two primary functions – it provides guidance on what is a

genuine voluntary offset and sets minimum requirements for calculating, auditing and offsetting the carbon footprint of an organisation or product to achieve 'carbon neutrality'.

As many local governments are now in the process of reducing their carbon emissions to meet voluntary reduction targets, awareness of the NCOS and accredited offsets will be important.

8.4. Carbon Farming Initiative

The Carbon Farming Initiative (CFI) is a carbon offsets scheme being established by the Australian Government to provide new economic opportunities for farmers, forest growers and landholders and help the environment by reducing carbon pollution. The Carbon Farming Initiative includes:

- Legislation to establish a carbon crediting mechanism;
- Fast-tracked development of methodologies for offset projects; and
- Information and tools to help farmers and landholders benefit from carbon markets.

Offset projects established under the Carbon Farming Initiative will need to use methodologies approved by the Government. These contain the detailed rules for implementing and monitoring specific abatement activities and generating carbon credits under the scheme.

One methodology that the DCCEE is currently in the process of evaluating is for environmental plantings. This methodology involves the establishment and management of permanent native forests that increase removal of carbon dioxide from the atmosphere. The abatement activity includes planting and/or seeding native species on cleared or partially cleared land.

This may provide new opportunities for local government, in conjunction with private landholders, to create viable "green sector" jobs and income streams.

8.5. EMRC projects and programs

There are a number of projects and programs currently being undertaken by the EMRC which support local government with energy and water efficiency initiatives, and climate change adaptation planning.

ACER

The ACER Program is an initiative developed to encourage and support member Councils within Perth's Eastern Region to monitor, report on and reduce their corporate carbon emissions. The ACER Program also provides information and education to the community and local businesses in the region on reducing energy consumption and other climate change related issues. The ACER Project has been specifically designed in partnership with the member Councils and WALGA to take into consideration each member Council's specific needs as unique entities.

Under the ACER Program, the EMRC and participating member Councils have joined the WALGA Emissions Reporting Platform hosted by Greensense Consulting. Once in full operation, participating member Councils will be able to use the data from the platform to

target areas of operations which require energy efficiency measures to be implemented and also to meet outcomes within their Local Climate Change Adaptation Action Plans. Also developed is a do-it-yourself "Home Energy Audit Kit" to enable residents of participating member Councils to audit the efficiency of their homes.

Perth Solar City
Perth Solar City is a $13.9 million funded program which forms part of the federal government's Solar Cities initiative. Perth Solar City trials and demonstrates a range of solar technologies in member Councils and homes in Perth's Eastern Region.

The program aims to increase the uptake of solar technologies through community engagement strategies and to decrease carbon pollution and energy use. This Australian government initiative is being delivered in partnership with local governments and industry until 2013.

Future Proofing Perth's Eastern Region - Climate Change Adaptation
Future Proofing Perth's Eastern Region is a framework that has been developed to complement regional actions to reduce emissions by identifying the major risks of climate change relevant to the region and to assist in the development of a regional adaptation plan to address the risks.

The Regional Climate Change Adaptation Action Plan 2009-13 is a foundation document that outlines what needs to be done at the regional level to adapt to climate change over the next four years. Local Climate Change Adaptation Action Plans are being developed for participating member Councils.

Water Campaign™
The Water Campaign™ is a sustainability program developed by the International Council for Local Environmental Initiatives (ICLEI) and the Australian government, aimed at providing local governments with a framework and structured approach to actively assess and manage their water resources.

The campaign is broken down into five distinct milestones achieving important project outcomes.

Water Audits
EMRC offers a comprehensive water auditing service. EMRC Environmental Consultants have undertaken a Department of Water, Water Corporation and Curtin University accredited Water Efficiency Auditing course and achieved Waterwise Auditor accreditation.

Energy Audits
EMRC is in the process of developing an energy auditing service which will provide:

- an analysis of historical energy use;
- an on-site survey and assessment of energy-using hardware, fixtures, equipment, and management practices to determine the efficiency of energy use;
- a range of practical and cost effective measures for reducing consumption; and
- annual financial savings, payback periods and return on investment for the various energy saving initiatives suggested.

9. Conclusion

The introduction of a carbon price mechanism will impact on local government operations and on the community in general.

The benefits of the economic reform which will be brought about by pricing carbon and the implementation of the Federal Government's Clean Energy Plan will also be realised by local government, their local community and the global community, both economically and environmentally.

The cost impact of carbon pricing on local government will be comparatively modest. Energy increases in the region of 10% in the first year, building cost increases of around 2% overall, and rises in the cost of consumables of around 2% are the figures being projected by a number of different economic models.

Implementing energy efficiency and other mitigation actions early will realise both social and economic benefits to local government.

There will be funding opportunities available to local government in the Clean Energy Plan to implement mitigation actions as well as economic opportunities to reform strategies and services in the transition to a low carbon economy. These opportunities are supported through a number of schemes, programs and projects available through the EMRC and government initiatives.



10. Acronyms and abbreviations

BOM	Bureau of Meteorology (Australian Government)
CFI	Carbon Farming Initiative
CO_2-e	carbon dioxide equivalent (carbon pollution measure)
CPRS	Carbon Pollution Reduction Scheme
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DCCEE	Department of Climate Change and Energy Efficiency (Australian Government)
DEC	Department of Environment and Conservation (WA Government)
EMRC	Eastern Metropolitan Regional Council
ETS	Emissions Trading Scheme
IOCI	Indian Ocean Climate Initiative
IPCC	Intergovernmental Panel on Climate Change
LED	Light Emitting Diode
MPCCC	Multi-Party Climate Change Committee
NCOS	National Carbon Offset Standard
NGER	National Greenhouse Emissions Reporting
ppm	parts per million (carbon pollution atmospheric concentration)
RCCAAP	Regional Climate Change Adaptation Action Plan
UNFCCC	United Nations Framework Convention on Climate Change

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Image References

Image location:	***Reference:***
Cover, top left	Power Lines, Bluewaters Power Station, Griffiin Energy http://www.griffinenergy.com.au/default.aspx?MenuID=76
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Cover, centre	Wind Farms in WA, Emu Downs Wind Farm, Sarah Rose http://ramblingsdc.net/Australia/WindWA.html
Page 4	Potential Emissions Paths Source: Adapted from Exhibit 2 'Potential Emissions Paths' from Project Catalyst (2010) *'Taking stock - the emissions levels implied by the pledges to the Copenhagen Accord*'.
Page 4	Figure 2.4: Projected growth in emissions and the abatement challenge Commonwealth of Australia (2011). *Securing a clean energy future: The Australian Government's Climate Change Plan.* Page 15.

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Page 6	Clean Energy Future image Commonwealth of Australia (2011). *Securing a clean energy future: The Australian Government's Climate Change Plan.* Cover page.
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