

Carbon pricing Implications for the Power and Utilities sector

August 2011



Key features and impacts of the Plan on the Power & Utilities sector:

	Reduction targets	- The Plan commits Australia to a reduction target of at least 5 per cent from 2000 levels by 2020 and 80 per cent below by 2050. - Meeting this target will require abatement of at least 159 000 000 tonnes CO2-e by 2020
	Who is liable?	- Any entities with facilities with covered emissions above 25,000 tonnes CO2-e will have a liability to surrender carbon units. The government estimates that approximately 500 'heavy emitters' will be obligated to surrender units under the scheme. - Electricity generating entities represent 40% of the top the top 10 emitting entities in Australia
	Carbon price starting points Evolution to an ETS	- The starting carbon price for each tonne of CO2, to be introduced on 1 July 2012, is \$23. This will rise (in real terms) to \$24.15 in 2013 and to \$25.40 in 2014. - As of 1 July 2015, a flexible carbon price will be introduced alongside an Emissions Trading Scheme (ETS). This will include a transitional price cap and floor.
	Penalties	An emissions charge for any shortfall in carbon units will apply at a rate of 1.3 times the unit price in the fixed period and twice the unit price in the flexible period.
	Energy Security Council	The Energy Security Council will consist of energy and financial market experts who will advise the Government on systemic risks to energy security emerging from the financial impairment of power stations arising from any source.
	Energy Security Fund Compensation arrangements	- The Energy Security Fund will provide transitional assistance to emissions intensive generators, including the allocation of free permits and payments for closure. - Free permits to the value of \$4.5 billion and cash to the value of \$1 billion will be distributed to generators with emissions greater than > 1.0t CO2-e/MWh, over six years.
	Free permits	Generators receiving free permits will have to develop and publish a Clean Energy Investment Plan that will outline their proposals to reduce emissions from their existing facilities, and invest in research while also satisfying a power system reliability test.
	Loans to purchase permits or refinance debt	The Plan includes a loan facility for generators to refinance debt should this not be available through the usual market channels and/or for the purchase at auction of future vintage carbon permits (for the first three years of carbon permit auctions).
	Closure of emissions intensive generators	The Government will seek to negotiate the closure or partial closure of some of Australia's most emissions intensive generators – coal-fired generation capacity with emission intensity greater than 1.2 tonnes CO2-e per megawatt hour (MWh) – which will remove up to 2,000 megawatts of capacity before 2020.
	Clean energy investment initiatives	- The Plan includes complementary strategies to reduce emissions, including the establishment of: Australian Renewable Energy Agency (ARENA), which will independently administer \$3.2 billion in existing Federal Government grants for R&D, demonstration and commercialisation of renewable energy technologies. Clean Energy Finance Corporation (CEFC), which will invest \$10bn in the commercialisation and deployment of renewable energy, energy efficiency and low- emissions technologies over five years from 2013/14. Clean Technology Investment Program, which will deploy \$800m over seven years, for manufacturing businesses to invest in energy efficient capital equipment and low emissions technologies, processes and products. Clean Technology Innovation Program, which will deploy \$200m over five years to support business investment in low-emissions R&D in the areas of renewable energy, low emissions technologies and energy efficiency on a matched (50:50) co- investment basis.
	Renewable Energy Target (RET)	The Renewable Energy Target, which increases progressively until 2020, remains unchanged under the Plan.

For more information, please contact:



Michael Shewan
Partner
Power and Utilities Leader
michael.shewan@au.pwc.com
(03) 8603 6446

10 July 2011 marked the release of the Federal Government's much anticipated 'Securing a Clean Energy Future' Climate Change Plan (The Plan), which has been followed up with an Exposure Draft of the Clean Energy Bill 2011 on 28 July 2011. The Plan heralds the start of a period of unprecedented transformation across the Power and Utilities value chain.

In this document we explore the facts of the Plan and the implications for the Power and Utilities industry. Included are reactions from industry following the carbon price announcement and an in depth Q&A with PwC Power and Utilities Leader, Michael Shewan, who explores the impact for both stationary and renewable generation. You can also find the accounting implications as well as a view on the M&A landscape moving forward. Responding now will help to ensure you are well placed with the transition to a carbon price economy and our conclusion highlights a number of important next steps for you to consider.

If you would like assistance working through the carbon price response strategies for your particular organisation, please contact me or your usual PwC representative.



Industry reaction

comments from across the sector

While the responses within the power and utilities sector have been varied, there has been a largely positive reaction from the renewables sector, networks and retailers. Owners of emissions intensive generators, who will undoubtedly feel the greatest impact with the introduction of a price on carbon, have expressed some concerns over some aspects of The Plan in its current form.

The **Clean Energy Council** (CEC) has described the Plan as a “once in a generation opportunity to transform Australia’s energy sector.” CEC has long argued that the introduction of a carbon price is a vital ingredient to ensure the long term viability of clean energy in Australia, citing other similar schemes in places such as New Zealand, South Korea and the European Union as proof that putting a price on carbon is the most effective method to achieve economy-wide abatement. The CEC considers the complementary policy measures such as the establishment of the Clean Energy Finance Corporation, and the continuation of the Renewable Energy Target (RET), as critical to achieving a real reduction in emissions.

Origin Energy and **AGL** have also praised the scheme. Origin released a statement saying that “it strikes a reasonable balance between a carbon price high enough to bring about real progress in reducing carbon emissions, and providing adequate safeguards for households who will pay the increases in costs necessary to bring about this change”. Meanwhile, AGL notes that “for the energy industry, the government has very actively engaged with the key players who are most affected...clearly, the package has attempted to address a number of key concerns including risks to the efficient and reliable operation of the electricity market.”

Similarly, the **Energy Networks Association** (ENA) has welcomed the announcement, noting the expected investment in technology, including renewable generation, smart technology and demand management.

From a renewables perspective, both **Pacific Hydro** and **Acciona** have responded positively, with Pacific Hydro’s commenting that “a price on carbon will drive billions in new investment, enable energy diversification and create significant new job opportunities across the nation.”

Not all reactions have been fully supportive of all aspects of The Plan in its current form. While the **Energy Supply Association of Australia** (ESAA) has reinforced the need for an ETS and are encouraged by the positive announcement in relation to renewable energy, they have however been critical of the current compensation plans, arguing that future investment in generation is at risk. More specifically, they express that an energy security fund that is ‘skewed’ toward only the most emissions intensive generators, coupled with the decision to disallow deferred payments for permits, “will place an unimaginable cash flow burden on electricity generators that will make electricity more expensive.” According to the ESAA, competition would also most likely be reduced with independent, second-tier retailers unable to get hedge contracts, which are used to lock in prices and protect against market volatility.

Such sentiment has been echoed by owners of emissions intensive generation. **TRUenergy** called the transitional assistance for existing coal fired generators “inadequate to avoid a level of impairment of generation assets,” with electricity price increases and supply security noted as potential impacts resulting from an impairment of the generation assets themselves. **International Power** expressed serious concern at the proposed legislation in light of the indication that large brown coal fired power stations will face potential early closure and commented that “a number of important aspects had not been addressed.”

- So, what does this mean for the future of the energy industry in Australia?
- How will the industry transition from coal- fired generation to gas and renewable sources of energy?
- Will the CEFC help to spur advancement in clean energy technology?

On the following pages, Michael Shewan, PwC’s Power and Utilities leader, shares his insights on some of the key issues impacting emissions intensive generators and the renewable energy sector.

Q&A

with PwC Power & Utilities Leader, Michael Shewan

Emission Intensive generation – managing impact, minimising risk

Q: What aspects of the Plan do you believe will have the greatest effect on the industry?

Electricity generation accounts for the largest share of Australia’s current emissions. The Plan covers a number of instruments through which it aims to reduce emissions. We have identified three key issues which will significantly affect the industry in the short to medium term:

1. Allocation of free permits
2. Payments for closure
3. Financial assistance to support Energy Security.

Q: Are free permits available to all generators?

The Plan includes \$4.5bn of free permits and \$1bn cash to be distributed to generators with emissions greater than 1.0tCO₂-e/MWh on an ‘as generated’ basis over the next six years (from 2011-12 to 2016-17).

Eligible generators will receive assistance for their emissions from the implied NEM average of 0.86tCO₂-e/MWh up to a maximum 1.3 tCO₂-e/MWh.

Generators receiving free permits will have to develop and publish a Clean Energy Investment Plan (CEI) that will outline their proposals to reduce emissions from their existing facilities, and invest in research while also satisfying a power system reliability test. A CEI plan must be submitted in each eligible financial year by 15 August.

It is not clear from the Plan if any restrictions or penalties will result if the investment plan is not carried out.

Q: How will this impact the industry?

The majority of brown coal generators in the La Trobe Valley and South Australia will be eligible for free permits, however a large number of black coal generators in NSW, Queensland and other locations with emission intensities of between 0.86 and 1.0tCO₂-e/MWh on an ‘as generated’ basis will not qualify for this assistance.

We expect generators to assess all aspects of their operations in light of the carbon pricing mechanism including plant efficiency, electricity trading strategies, and the level of return available from investment in future maintenance capital expenditure.

In so far as a carbon price impacts the operations and competitiveness of a generator, owners will need to review the economic life of their assets. In doing so, the generators will need to consider asset value, impairment and capital structure.

In the event that a generator receives insufficient assistance, whether from the Government and/or an increase in electricity prices, it is likely that an impairment will occur which may impact the credit quality of the asset. A weakening credit profile may reduce a generator’s ability to enter into electricity hedging contracts which consequently may have an adverse

impact on the generator’s cost profile and its ability to access debt. In turn, this may have flow-on impacts on profitability, banking covenants and the ability to refinance. From a whole of industry perspective, financial distress of this nature may impact security of supply of the network.

Q: Does the Plan provide assistance for the most affected generators?

The Government has said that it will establish an Energy Security Council, comprising energy and financial market experts. The Council will advise the Government in the event that systemic risks to energy security emerge from the financial impairment of power stations arising from any source, including carbon pricing.

The Council will report to the Treasurer on appropriate policy instruments available to address energy security risks which will include:

- the provision of Government loans to generators which need to refinance their debt in the event that finance is not available from the market
- provide additional working capital for the purchase at auction of future vintage carbon permits (for the first three years of carbon permit auctions).

In both cases, the Plan intends for the loans to be priced on terms that encourage generators to seek private finance.

We are not aware that the Government has acted in this capacity before. Whilst the intent of the Plan is supportive and in favour of eligible generators, its implementation may be difficult due to the arrangements with existing financiers that would need to be considered and individually negotiated.

Similarly, until the terms and conditions of these loans are fully understood, it will be difficult for the generators (and banks) to determine the competitiveness of any bank offer. It is also possible that banks may look to the Government support as a lower risk exit strategy from their existing loans to impaired generators. The Government support may also change the negotiating positions of both lenders and asset owners.

Q: How will the Plan achieve its aims of reducing emissions from the most emissions intensive coal fired generators?

The Plan includes scope for payments for closure of around 2,000MW of highly emissions-intensive (greater than 1.2tCO2-e/MWh ‘as generated’) coal-fired generation capacity by 2020. A ‘value for money’ Expression of Interest process will be undertaken to identify the capacity that will be retired, and compensation will be provided by the newly created Energy Security Fund. No budget indications have been provided, and agreed payments are not expected to take place before 2016.

Q: Which generators will be eligible?

The vast majority of eligible brown coal generators are located in the La Trobe Valley, Victoria where Hazelwood (1,600MW) and Yallourn (1,480MW) power stations are generally recognised as two of the most highly emission intensive generators. No black coal-fired generators are expected to be eligible.



Q: How will the supply in the National Electricity Market (NEM) be impacted?

In 2009-10 the NEM consisted of approximately 200 large generators with 54GW of registered capacity generating over 230TWh. Over this period, brown and black coal- fired generators accounted for approximately 55% (30GW) of total registered capacity, but generated over 77% (178TWh) of total generation sold through the NEM.

The removal of 2,000MW would decrease the total registered generation by approximately 4% which would need to be replaced. The mix and timing of replacement technology will need to be carefully considered to ensure that the withdrawal of this baseload generation does not impact security of supply.

Q: What are the financial implications of the closure of 2,000MW of generation?

As described earlier, the Government will establish an Energy Security Council to advise Government in the event that systemic risks to energy security emerge from the financial impairment of power stations. The introduction of a carbon pricing mechanism is likely to make this risk more acute.

It is not yet clear how the Government intends to replace the 2,000MW that is retired. Under the Plan, the Energy Security Council can advise the Government on the impact of closure and the policy instruments available to them. It is not clear who will implement these policy instruments. In the event that the Government is required to provide a solution it may be necessary for the Government to ‘pick a winner’ that will ensure energy security.

For more information on the Payments for Closure issue, please refer to our website – www.pwc.com.au

Renewable energy – continued growth, stimulus for investment

Policy initiative	Impact
Renewable Energy Target	The Renewable Energy Target (RET) remains unchanged under the Plan. The cost of generation for coal and gas-fired generation will rise relative to the cost of renewable energy technologies; however, the impact of the carbon price (causing an increase in wholesale power prices) can be expected to be offset by a reduction in the price of renewable energy credits (RECS) under the RET. This analysis is consistent with the views of Treasury modelling of the carbon price.
Clean Energy Finance Corporation	The CEFC will be established to invest in commercialisation and deployment of renewable energy, enabling technologies, energy efficiency and low-emissions technologies. The CEFC will not invest in carbon capture and storage. Half of the funding allocated to CEFC will be dedicated to investment in the renewable energy sector and the balance will be available for investment in clean energy, which includes renewable energy but also accommodates co-generation and other hybrid solutions. We would expect the CEFC to invest in enabling infrastructure, large scale solar and potentially geothermal, biomass and marine energy projects once they become commercially viable. Funding from ARENA will be important in bringing these emerging renewable energy technologies to a commercial-ready stage and we expect some of the funding tools to include concessional loans, equity investments and loan guarantees. We expect the CEFC may be inspired by the Green Investment Bank concept pioneered by the UK.
Australian Renewable Energy Agency	Australian Renewable Energy Agency (ARENA) will be a new independent statutory authority that will oversee a number of existing programs and funding commitments relating to the renewable energy sector including Solar Flagships program and various programs administered by the Australian Centre of Renewable Energy (ACRE), which include the REDP and ACRE solar projects. ARENA will oversee \$3.2bn of existing funding commitments and may also receive future funding, including dividends from the CEFC.

Q: What role does renewable energy play in the plan to reduce emissions?

A key objective of the Plan is to promote the long term growth of the renewable energy sector in Australia, and Treasury modelling suggests that renewable energy (including hydro) will account for 40-50% of power generation by 2050 (35-45% excluding hydro). However, over the period to 2020, the introduction of a carbon price alone is not expected to have a significant impact on the renewable energy sector because the expected carbon price is unlikely to be sufficient to make renewable energy generation competitive with fossil-fuels during that timeframe. Therefore, the Renewable Energy Target (RET), and the proposed new sources of funding to boost the commercialisation of emerging

renewable energy technologies, are critical in supporting a carbon price to encourage continued growth in the renewable energy sector.

Q: What is the expected impact of the Plan on the renewable energy sector in the next few years?

The Plan is a significant boost to the renewable energy industry over the medium to long term, with non- hydro renewable energy generation projected to grow from approximately 3% of Australia’s current overall power generation to above 35% in 2050. The shorter term impact is expected to be more modest with the existing RET scheme playing the predominant role in supporting the growth of renewable energy in the period to 2020. However, some of the other

‘complementary measures’ included in the Plan will be an important source of support for the emerging renewable energy technologies.

Q: What is the expected impact for the emerging technologies?

Emerging technologies like solar thermal, geothermal and marine energy will be looking to ARENA and perhaps to the CEFC to provide funding support to assist them in commercialising and scaling up their technologies to the point that they can compete with wind and fossil- fuels based on the carbon price alone. Although the gap in terms of energy cost is significant today, we expect the gap will narrow by 2020 with the support of these new sources of funding.

Q: Can you tell us more about how the UK's Green Investment Bank and what we could expect for the Australian model?

The Green Investment Bank (GIB) is also at a relatively early stage in its development, but the UK Government published a paper in May to provide an overview of the objectives and governance structure of the GIB. The over-arching logic of the GIB is to correct market failures that may endure despite the range of other policy initiatives in existence in the UK marketplace.

The GIB will assess projects using a combination of financial and green objectives and will seek to leverage private capital to “accelerate the private sector investment in the UK’s transition to a green economy”.

The UK government has identified certain sectors which may be suitable for ‘intervention’ by the GIB including offshore wind, waste-to-energy and non-domestic energy efficiency.

Q: How do you think the CEFC might differ from the model proposed for the Green Investment Bank?

Our initial view is that the overall purpose will be similar to the UK model, but the role of the CEFC will be tailored to the Australian energy landscape. It will also depend on the extent to which the various other policies included in the Plan can achieve the overall objectives of reducing greenhouse gas emissions at the lowest possible cost. The policy announcement suggests that the Australian Government sees a potential role for the CEFC for investment in local manufacturing of renewable energy and energy efficiency components. There is also a role for the funding of commercial demonstration projects in the solar thermal, marine energy and geothermal sectors, given that these represent significant opportunities for Australia, but which may be difficult to fully realise without Government funding support. However, it may be difficult for the CEFC to justify an

investment in a demonstration project on purely commercial grounds, so the CEFC will need to consider how it can achieve its policy objective of “getting innovative proposals and technologies off the ground”. The Plan mentions that a number of funding tools will be used to support projects, including loans on commercial or concessional terms and equity investments.

Q: What will this actually mean in terms of investment in the renewable energy industry?

The Plan is very positive for the sector over the long term. Over the next few years, the impact will depend on the direction and design of ARENA and the CEFC and how effective they are in implementing their mandates. We think the combination of the CEFC and ARENA, combined with the longer term benefits of the carbon price mechanism, will stimulate increased investment in the renewable energy sector over the next few years. We also expect to see increased interest in Australia from major foreign investors in the sector.

The UK's Green Investment Bank



The UK's Green Investment Bank was first proposed in December 2009 as part of the Government's pre-budget report, which followed concerted lobbying from a wide range of business and environmental groups. Gaining support from the Conservative Party, the Green Investment Bank is thought to help reduce the risk of investment in renewable energy, energy efficiency and low carbon energy and transport infrastructure. By reducing risk and effectively facilitating public-private partnerships, a UK Green Investment Bank would speed up progress towards the UK's carbon reduction targets. In March 2011, the UK Government announced that the Green Investment Bank would be allocated £3bn in initial funding



The economic case for a Green Investment Bank
Green finance and green growth

New green technologies represent an important new source of jobs, investment and enterprise in the UK. Over the past decade, the UK has been reliant on housing, the public sector and the financial industries for over 70% of its economic growth. If the UK is to generate sustainable economic growth, it needs to develop its capacity to compete in the new green businesses and industries.

- The global market for green technologies and services is already worth \$3 trillion per year.
- The UK has less than a 5% share of this market – less than France, Germany, USA or Japan.

- These official government figures also show that the market shares achieved by Germany and France, normalised to their GDP, are around 50% higher than the UK's share.
- The UK's environmental industry currently exports £10 billion a year, compared with £50 billion of annual exports by the German green industry.
- Policies to promote ethanol in Brazil have already created 500,000 new jobs, while over 200,000 people now work in Germany's renewable industry sector.
- By 2020 more people in Germany are expected to work in environmental technology companies than in the car industry.

Source: 3 Feb 2010 announcement: <http://www.bobwigley.co.uk/wp-content/uploads/2010/02/Green-Investment-Bank-growth-week.pdf>

Snapshots

How do you *account* for the carbon price?

Accounting for the carbon price will vary depending on the nature of the underlying business, the emissions intensity of the operations, and the level of government assistance received.	There is currently no prescribed accounting guidance for companies to apply in recognising the impact of the scheme in their financial statements. Consequently, there is expected to be a diverse range of accounting approaches applied in the marketplace (as has been the European experience) which can result in significantly different outcomes in the income statement and balance sheet. This may impact a number of key metrics, for example, bank covenants, employee incentive schemes and regulatory licence compliance measures (e.g. AFSLs). Companies will also have to disclose their accounting policies in respect of the scheme so users can understand the impact within the financial statements.
What do I need to consider to maximise value to my organisation?	Where choice exists, companies should invest time understanding which accounting policy most appropriately aligns with the underlying economics of the transaction and also meets their strategic business objectives. Companies should consider: • Impact of the scheme on asset impairment calculations • Accounting for free permits received • Accounting for cash received as part of the government assistance package • Accounting for payments / contractual arrangements for early closure of generation facilities • Impact of government assistance on asset impairment assessments • Where permits should be recognised on the balance sheet • How permits should be accounted for on an on-going basis • Accounting for forward contracts to purchase or sell permits • Accounting for carbon clauses within sales/purchases/derivative contracts • Accounting for liability to surrender permits over generation period.
Carbon price and M&A activity	
What effect will this have on M&A activity?	• M&A activity is likely to continue unabated wherever there is strong strategic rationale for a transaction • The Policy presents all companies with an opportunity to make changes to their operations and pursue M&A to enhance their competitive position. The requirement to assess potential carbon risks may lengthen transaction timetables. Potential acquirers of assets and businesses will need to consider a number of key issues when conducting due diligence, including whether the target is a liable entity, whether the entity may be eligible for assistance, the impact of the carbon tax on the target's cost base and any impact on working capital.
Will this provide the market with more certainty?	Uncertainty will remain an issue for investors for some time to come, as the impact of the carbon price works its way through the economy. However legislative environment will become increasingly certain once it has been passed by Parliament
How will this affect acquisition values?	Valuations will need to be adjusted to reflect both the direct and indirect impacts of the carbon price.
How about access to credit?	Banks have been focusing on the expected introduction of the carbon price for a number of years. Once the new landscape is understood, banks are expected to work with generators and other carbon liable businesses to establish sustainable capital structures that support the expected life of the assets under the Plan.
Want to know more?	Visit www.pwc.com.au

Next steps

		Actions
Assess whether you are directly liable	• Determine the facilities over which you have operational control • Determine the quantity of covered emissions for each facility • Assess whether each facility is liable • Set up a carbon price project office to manage carbon work streams	
Manage the cost implications for your business	• Identify emissions abatement opportunities and assess the financial viability of each using marginal abatement cost curves • Investigate your ability to access Government funding for abatement and energy opportunities • Review existing supply contracts and assess the potential carbon price pass through impacts • Develop a carbon procurement/trading strategy – internationally linked units – via the local auction process – Carbon Farming Initiative projects • Consider liability transfer options to enable you to manage your own carbon price risk – from gas retailers – within joint ventures – within corporate groups – from contractors	
Consider the potential revenue impact	• Assess your ability to pass on additional costs to customers – review existing and future customer contracts for pass through clauses – assess your market characteristics (local vs international prices/competitors) – consider product pricing changes – consider potential product substitution impacts	
Manage your balance sheets impacts	• Develop accounting policies for the treatment of carbon units • Assess your overall future cash flow impacts and develop cash flow management strategies to maintain working capital • Update relevant asset NPVs and assess potential asset impairments • Consider the impacts on your current and future investment decisions	

Contacts

New South Wales

Dan Sturrock
Associate Director
dan.sturrock@au.pwc.com
+61 (2) 8266 3015

John Tomac
Partner
john.tomac@au.pwc.com
+61 (2) 8266 1330

Queensland

Craig Fenton
Partner
craig.fenton@au.pwc.com
+61 (7) 3257 8851

South Australia

Mark Coughlin
Partner
mark.coughlin@au.pwc.com
+61 (8) 8218 7760

Victoria

Michael Shewan
Partner
Power and Utilities Leader
michael.shewan@au.pwc.com
+61 (3) 8603 6446

Michael Happell
Partner
Energy, Utilities and Mining Leader
michael.happell@au.pwc.com
+61 (3) 8603 6016

Liza Maimone
Partner
Sustainability and Climate Change Leader
liza.maimone@au.pwc.com
+61 (3) 8603 4150

John Henderson
Associate Director
john.m.henderson@au.pwc.com
+61 (3) 8603 4795

Western Australia

Darren Smith
Partner
darren.a.smith@au.pwc.com
+61 (8) 9238 3240