

Global Financial Crisis and the energy supply sector

Summary

esaa surveyed energy sector businesses to better understand the impact of the global financial crisis on the energy supply sector. 40 businesses responded to the survey, with only two generators and three network businesses not responding. As not all businesses responded, the results should be considered conservative.

The energy sector will require significant additional capital in the next five years. The results suggest over **\$97 billion** is needed to refinance existing generation and network assets and to invest in both existing and new assets.

Energy sector capital requirement – next five years	
Refinancing - networks	\$29 billion
Refinancing - generation	\$19 billion
Capital expenditure on existing & new generation assets	\$18 billion
Capital expenditure on existing & new network assets	\$31 billion
	\$97 billion

In addition to this \$97 billion of capital, electricity generators estimated they will need additional credit facilities to finance **over \$20 billion** worth of permits in the next five years, not including any credit that may be required to finance future permits to enable the contracting forward of electricity.

Total refinancing obligations over the next five years are more than \$48 billion, with \$29.1 billion in network assets and a further \$18.9 billion in generation assets. 60% of network refinancing will occur in the next two years, while 45% of generation refinancing will be required in the second year of the Carbon Pollution Reduction Scheme (CPRS). The private sector accounts for 78% of the generation refinancing obligations and 40% of network refinancing. 45% of all debt is currently from international sources.

New capital expenditure on existing generation assets over the next five years is estimated at more than \$6 billion while modelling for esaa by ACIL Tasman suggests a

further \$33-35 billion of new generation investment will be required in the next ten years to accommodate both the CPRS and expanded renewable energy target. If only a third of that is required in the next five years that would add a further \$11-12 billion (survey results were incomplete for new generation investment). New capital expenditure on both existing and new network assets is expected to be more than \$31 billion over the next five years.

A number of key themes emerged from the survey that are critical to the industry's ability to source the required capital in coming years:

- The number of foreign banks in Australia has reduced significantly with the remaining banks reluctant to issue debt.
- The energy sector is competing with all sectors for equity and debt and capital is scarce.
- The market capitalisation of major institutions has declined dramatically over the past 18 months.
- Risk margins/credit spreads for the energy sector have increased substantially in the past two years – 200 to 350 basis points.
- There are now more onerous covenants and restrictions on refinancing, while the tenor of debt renewals has shortened to no more than three years.
- The Government's bank deposit guarantee has constrained the liquidity of non-bank lenders.
- Access to new equity is severely restricted given the recent loss in asset values across the economy and banks are seeking lower gearing ratios when equity finance is in short supply. Equity premiums have also increased.

Policy implications

There are a number of government/regulatory policies that are exacerbating the impact of the global financial crisis on the energy sector including: the largely unmitigated impact on the balance sheets of generators from the introduction of the CPRS; the Australian Energy Regulator's (AER) draft proposal to significantly reduce the rate of return on network assets; the crowding out of non-bank private sector lenders through the provision of a guarantee for deposits and wholesale funding for banks, building societies, credit unions and State and Territory governments; and the proposed support for the commercial property sector through the Australian Business Industry Partnership directing resources away from other sectors including energy.

The administrative allocation of a sufficient number of permits to coal-fired generators to mitigate the serious balance sheet implications from the introduction of the CPRS, an adequate rate of return for network assets over the next five years, and an end to distortionary Government policies that favour some sectors and reduce the pool of funds available to the energy sector during a period of significant capital requirements and constraints are all required to ensure security of energy supply and investor confidence in the sector going forward. In the absence of this optimal policy response, the industry may need to consider whether a government-supported energy sector financing facility is also required.

Carbon Pollution Reduction Scheme

The energy industry is facing a period of fundamental and ongoing change. The long-term prospects of the current generation assets will depend on the timing and design of the CPRS, the cost of domestic abatement, and the cost and availability of international abatement permits. New lower emission generation investment will also drive the need for significant new investment in electricity and gas networks/pipelines.

Industry modelling, along with two of the three sets of government modelling of the CPRS, show that the proposed level of administratively allocated permits provided under the Electricity Sector Adjustment Scheme (ESAS) does not adequately offset the likely loss in asset value for coal-fired generators. The global financial crisis is compounding this effect in the short to medium term by making it harder for businesses to negotiate refinancing arrangements, finance new investments and fund the purchase of emission permits.

The failure of the CPRS to adequately recognise the significant asset value losses from the introduction of the Scheme will result in the immediate write-down of generation assets. This will significantly reduce, and in some cases could extinguish, the equity in the assets leaving unacceptably high gearing ratios. The stranding of electricity sector assets, coupled with the ongoing future uncertainty around longer-term abatement objectives and the extent of so-called “complementary” measures such as renewable energy targets, feed-in-tariffs and energy efficiency targets, will increase the risk premium applied to the sector. In a tight capital market, the ability of generation assets to attract new sources of equity and/or debt will be extremely difficult given shortened asset lives, the relative ‘riskiness’ of future revenues, high operating costs (within year permit costs for some facilities will be at least \$400 million in addition to ordinary operating expenditure), and the significant site restoration and employee entitlement liabilities that will need to be met upon closure of the asset. Without new debt/equity injections, there could be premature closure of plant before new lower emission plant can be planned, permitted, financed and constructed, jeopardising security of supply.

AER’s Weighted Average Cost of Capital

The outcome of the AER’s current cost of capital review will have critical implications for the future operation of the national energy market, as it will shape investment incentives for a range of energy infrastructure over the next decade. However, the proposed draft statements released by the AER do not incorporate a broad assessment of the impacts of a range of key challenges and risks facing energy infrastructure development.

One important challenge will be ensuring Australia’s energy infrastructure is able to attract the required investment following the introduction of climate change policy initiatives such as the expanded renewable energy target and CPRS. These policies will result in a strong need to fund additional investments to transform and strengthen electricity network infrastructure to facilitate carbon reduction goals. This need will be additional to the already substantial investments required to renew a generation of ageing electricity infrastructure and maintain high levels of reliability while meeting growing demand.

The global financial crisis represents an additional significant risk that the review needs to take into account. Major disruptions in the operations of both Australian and international capital markets reinforce the need for the AER to adopt a cautious and prudent approach which fully accounts for current market conditions and expectations. This environment

provides a strong imperative to reconsider aspects of the AER's proposed cost of capital approach and avoid 'step-changes' in both cost of capital values or regulatory methodologies.

Efficient and timely investment in energy networks is a critical component of a competitive, safe and reliable energy supply system. At a time of significant challenge for the sector, it is important that the necessary incentives are in place to ensure investor confidence to deliver much-needed investment. Reducing the return on capital for these investors, at this time of great risk, would be counterproductive to the interests of the sector as a whole, including consumers.

Survey results and themes

Key survey results

The esaa survey of Australian energy sector businesses reveals the scale of the refinancing task in the short to medium-term:

- Australian energy businesses face a total refinancing obligation over the next five years of more than \$48 billion¹.
- The following table provides an annual breakdown of refinancing obligations for generation and network businesses.

	Networks (\$ billion)	Generation (\$ billion)
2009-10	10.3	3.2
2010-11	7.2	2.8
2011-12	5.9	8.4
2012-13	3.5	3.3
2013-14	2.3	1.0

- Of the total amount of refinancing over the next five years, network businesses account for \$29.1 billion and generation businesses account for \$18.9 billion.
- Refinancing obligations over the five years represent a third to one half of the entire existing asset base for the Australian energy sector.
- Private sector participants account for about 78% of total refinancing in the generation sector over the survey period.
- Private sector participants account for about 40% of total refinancing in network sector.

¹ Two generation businesses and three network businesses had not finalised/responded to the survey at the time of writing this paper.

- Most private sector participants reported a debt obligation to international banks – the average response was around 45% of debt from international sources.

The survey also provided numbers on capital expenditure budgets:

- Planned capital expenditure on existing generation assets over the next five years is more than \$6.3 billion.
- Planned capital expenditure on existing and new network assets over the next five years is more than \$31.2 billion.

Survey participants expect to spend more than \$21 billion over the next five years purchasing carbon permits (not including any future permits that may be required for future electricity contracting). The annual spend on permits rises from about \$4 billion in 2010-11 to about \$4.6 billion in 2014-15. Respondents assumed differing permit costs in the initial year, ranging from \$15 to \$30 per permit. The average price equates to about \$22.50 per permit.

Comments on the global financial crisis

The global financial crisis is having a direct and immediate impact on private sector participants in the energy supply sector, most notably emissions-intensive generators. These businesses often have a number of equity owners and multiple debt providers including domestic and international banks. While this reduces the individual investor risks of purchasing and funding large sunk assets, it makes the process of refinancing more complicated.

State-owned corporations indicated that they generally had ready and direct access to funds to refinance existing assets and invest in new network and generation assets through State-based treasury corporations.

Key themes from the general comments to the survey on the state of global debt markets included:

- The number of foreign banks operating in Australia has reduced significantly in the past six months and many of the remaining banks are reluctant to refresh or issue new loans. One respondent noted that there are only 11 banks in the world with a AA+ credit rating – the top four Australian banks are in this category.
- The withdrawal of international banks is impacting all sectors of the domestic economy. The Australian energy sector is competing with other major corporate businesses that are also seeking new sources of scarce credit from the Australian banking sector.
- The market capitalisation of the major international institutions has declined dramatically in the past 18 months. One participant provided a chart of the market values of 15 major financial institutions in July 2007 and January 2009 that shows the full extent of the write-down in the balance sheets of the major banks (see attachment 1).
- Risk margins and credit spreads for the energy supply sector have increased substantially in the past two years – in the order of 200-350 basis points, depending on the credit rating of an individual business or the structure of a particular

investment project. In some cases, businesses have found that the cost of capital is not the problem; banks are just not prepared to write new business until the full extent of the global financial crisis is better understood.

- Banks are placing more onerous covenants and restrictions on any refinancing. In many cases, banks are requiring more secured financing, lending only to higher credit rated entities, including additional review events, and requiring higher levels of interest cover.
- The tenor of debt renewals has shortened considerably. A number of participants said that banks would not currently consider anything longer than three years.
- There is more due diligence on existing and new projects, resulting in greater delays in finalising any financial transaction.
- The Australian Government's decision to implement the Bank Deposit Guarantee Scheme has constrained liquidity and increased the market spreads of non-bank lenders. This may flow through to increased debt financing costs for participants including State and Territory-owned corporations that are not backed by AAA-rated governments (financing issues for State and Territory governments have since been addressed).

Participants commented that access to new equity is severely restricted given the recent loss of asset values. New investors are reluctant to enter the market given the uncertain level and timing of future carbon costs and the general decline in equity investments. Banks are seeking lower gearing ratios for new energy sector transactions at a time when equity finance is in short supply. Equity premiums have increased as a result. Current equity holders are reluctant to invest further funds into assets that have lost significant value in recent times.

The Australian Energy Market Commission commissioned S3 Advisory to undertake a review of financial market conditions and the availability and cost of capital for investment as a result of the introduction of an emissions trading scheme. The S3 Advisory report was finalised in December 2008. The comments made in that report reflect a number of the observations in response to the survey:

- Debt providers are now reducing their exposure and requiring equity providers to take more of the risk, therefore increasing equity risk premiums.
- Greater ability by providers of capital to be more selective in allocations of their capital, therefore requiring more reward for lower risk.
- Equity providers are risk-shy given the losses faced by some equity providers since the credit crisis began.

A summary of the key findings of the S3 Advisory report is provided at attachment 2.

Comments on the AER's weighted average cost of capital draft determination

Those that commented on the AER's draft decision to reduce the level of the WACC indicated that it would substantially reduce the overall earnings for network businesses facing regulatory resets. This is at a time when both equity and debt margins have increased substantially.

Participants commented that the extent of the global financial crisis and the risk premiums for equity investments have both increased dramatically since the AER considered its draft WACC decision.

The reduction in the WACC would have significant ramifications on the ability of network operators to access debt and invest in network assets:

- Debt providers could factor in an additional “regulatory risk” margin for network investments. This could be reflected in future credit ratings and result in higher debt margins.
- Most network investments have lives beyond 20 years. Investors will be reluctant to make such investments if long-term returns are significantly reduced.
- Networks will only invest on the basis of reliability requirements.
- There will be little or no incentive to invest in discretionary projects such as ‘market benefit’ investments, upgrades to interconnectors and major flow paths, and investment in smart networks to facilitate distributed generation and demand management initiatives.

The AER is currently considering its final decision on the setting of the WACC for future revenue determinations. The esaa, the network associations and the network businesses have put forward submissions to the AER detailing the deficiencies of the draft review. The AER has sought to extend the timeline for final report on the WACC review from 31 March 2009 to 1 May 2009.

General comments on the Carbon Pollution Reduction Scheme

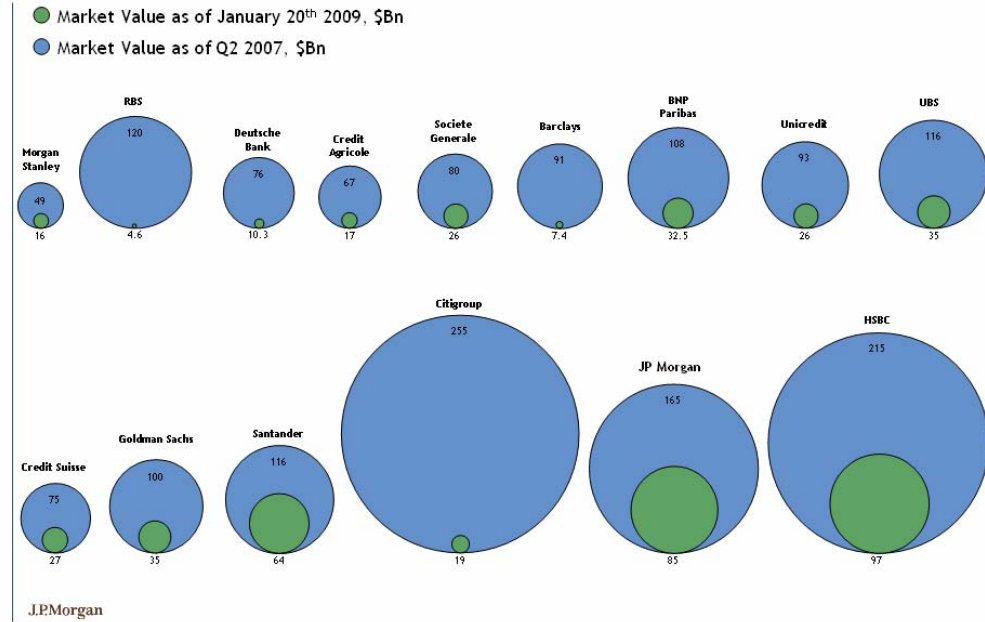
Survey respondents raised the following points regarding the Carbon Pollution Reduction Scheme:

- The financial impact of acquiring permits on short-term cash flows for generators differed between businesses, most notably whether the business was privately or publicly owned. Anticipated levels of permit cost pass-through also varied significantly, although no coal-fired generator forecast full recovery of permit costs.
- Many participants noted that the introduction of the CPRS has significantly altered the risk profile of the industry, further increasing risk premiums for the generation sector.
- A number of businesses are operating under financial arrangements that did not envisage such a large shift in operating costs and consequently they are not currently able to access credit facilities to cover the additional cost of acquiring permits.
- The CPRS will place considerable strain on the finances of the electricity sector. The decline in the asset values of some plant may trigger debt repayments under existing debt agreements or debt covenants. Financing arrangements between debt providers and generation businesses generally include provisions that enable financiers to withdraw loan facilities or accelerate loan repayments in certain circumstances.

- The CPRS may provide the trigger for debt providers to review existing debt covenants. Borrowings may become payable earlier or the borrower may be given a period to convince their financiers that the facility should not be cancelled, failing which the borrowing becomes repayable. Refinancing would likely involve higher cost debt and larger debt repayments, exacerbating the financial stress faced by the generator.

Attachment 1: Market capitalisation of major international banks, 2007 and 2009

Banks: Market Cap



While JPMorgan considers this information to be reliable, we cannot guarantee its accuracy or completeness.

Source: Bloomberg, Jan 20th 2009

Attachment 2: S3 Advisory, Final Report to the AEMC: Financing the Future Energy Sector Investments in Australia

The AEMC commissioned the report as part of its review of the energy market frameworks in light of climate change policies. The report involved a series of interviews with market participants, debt and equity providers, ratings agencies and other stakeholders.

The report examined the issues associated with the financing of future energy sector investments in Australia and in particular the allocation and cost of capital to the sector as a result of a CPRS and RET out till 2020. The report deals with these issues at an aggregate and energy sector level rather than a project-specific level except in a number of key areas.

Given the effect of the credit crisis, many project proponents seeking capital will need to be significantly more sophisticated in their approaches to capital providers. Project proponents will need to understand the requirements of the capital providers and their strategic objectives for investment. It will not be sufficient for the investment evaluation to be rigorous, the returns attractive and the risks seen to be removed/managed or appropriately priced.

Access to capital

Access to capital has become increasingly difficult as a result of the credit crisis and risks are perceived to have risen for investments in the energy sector as a result of the commitment to introduce a CPRS and RET. Findings include:

- Competition for global capital will be intense given the demand for it to be allocated elsewhere (there are huge capital demands from a number of infrastructure sectors globally).
- Australia has for a number of years been viewed by many international capital providers as an increasingly complex place to invest and with demising reward. This perception has intensified with the Government's commitment to the introduction of CPRS and RET.
- The demonstrated behaviour of Government in addressing the transactional cost for the generation sector associated with the introduction of CPRS and RET will be important. This will send a clear message to foreign investors about the degree of sovereign risk associated with investment in the Australian energy sector.
- The current global credit crisis has significantly reduced the international pool of capital that can be accessed for investment in Australia. Our domestic banks appear unlikely to have sufficient capital to support the level of investment required in the Australian energy sector.
- Australia is a price taker in global capital markets and if it is to be able to access capital for the energy sector the projects will need to represent attractive reward for the risk investors will need to accept. This may require that the price of energy rises above that necessary to recover both the cost of carbon and a risk-adjusted cost of capital. To be able to attract capital the cost of capital may need to rise above that implied by the risk of the investment.

- It may take five to seven years to repair the capital stock internationally and around the same time to repair the capital base of Australian banks following the credit crisis.
- International banks are retracting their balance sheets from application in Australia to focus on their home markets, thereby reducing access to the capital.
- Access to project financing will be extremely limited with the number of banks offering this form of finance in Australia reducing as a result of the credit crisis. Where project financing is available the banks are unlikely to accept any risk and the counterparties will need to be first class.
- The magnitude of the credit crisis will result in a step change to a more conservative approach to capital allocation which is likely to last a generation, reducing debt allocation and requiring additional equity to be committed to projects. In the absence of the additional equity, the projects will not proceed. Where the equity capital is available it will come at a higher price as a result.
- There will be an institutionalising of a more conservative approach to the provision of capital in response to the current credit crisis, which will transfer risk to equity and increase the risk premium attached to investment in general and for the energy sector.
- Governments are better placed when capital is severely constrained to access capital and at a reasonable price (see Figure 5.1), and may need to step in to provide capital where the private sector can't. Governments may also need to consider underwriting projects for a number years, or until the private sector can access capital at a more competitive price.
- Additional capital, beyond the capital required to meet the RET requirements, maintain existing service capacity and expand networks, will need to be accessed for the following:
 - It is understood that around \$6.1 billion of energy sector project financed debt will need to be refinanced between 2009 and 2012 within a background of tight credit conditions and a significant number of general corporate refinancing placing pressure on debt providers given the quantum of debt needed. It is unlikely that the loans can be rearranged on equally favourable terms, therefore increasing the cost of funds for these entities, potentially reducing the level of debt in the capital structure and increasing a call on equity providers to inject additional capital.
 - Potential additional equity injection for projects where the assets may be impaired.
 - Renegotiation of bank guarantees for operations in the NEM. The introduction of CPRS and RET is likely to require that relevant market participants renegotiate bank guarantees for operations in the NEM. There is unlikely to be the same favourable terms offered by banks and there is potential for some existing participants to not be able to access a guarantee given the current credit conditions.

- Purchase of permits or abatement will require significant funding support. If there is a perfect pass-through of costs the issue can be minimised however the working capital requirement of some entities will need to increase to deal with this expenditure. If the private sector needs to access either debt or equity capital to fund this expenditure, the costs associated with it will be higher than would have been the case 12 months ago.
- Additional equity to reduce gearing of existing and future projects as debt providers reduce their exposure to risk.
- Additional equity to fund the transactions costs associated with existing generators transitioning from existing higher emitting plant to lower emitting plants. While the transition may have occurred over a longer time frame without the introduction of CPRS and RET, the bringing forward of this expenditure will place additional funding pressure on energy sector participants.

Allocation and reallocation of capital

Should Australia be competitive in attracting capital, the allocation of capital and reallocation of existing invested capital will play an important role in determining whether the investment needs of the sector can be met. Findings include:

- Existing investment in all segments of the Australian energy sector will face increased risk to some extent as a result of the introduction of CPRS and RET. The precise nature of the arrangements (e.g. carbon price trajectory, compensation for high emitters and how this is applied) will determine the degree of risk and how it is allocated. This will force capital providers to re-examine their allocation of capital to their investment and the cost of the capital they apply.
- Capital providers recognise that the energy sector segments have differing risk profiles (eg electricity has a different risk profile to that of gas networks) and expect that the introduction of CPRS and RET will potentially change the relative risk between sectors.
- Existing investors in the energy sector that will be materially disadvantaged by the introduction of CPRS and RET are likely to exit the sector all together – this will potentially direct some investment in renewable projects intended for the Australian energy sector to other countries.
- Capital providers, where they have an interest in investment in Australian infrastructure, consider the energy sector to be one of the least attractive areas for investment as a result of the additional risks imposed by CPRS and RET.
- Some international capital providers commented that they see potentially more attractive energy sector renewable investment opportunities outside Australia until the price of carbon is around \$50/t or above in Australia.
- Some capital providers considered that the renewables sector would present more risk as a result of the introduction of CPRS and RET and as a result are likely to allocate their capital elsewhere.

- While regulated assets are considered to be the lowest risk of any segment, the potential of a reduced regulatory WACC and the potential underfunding of network augmentations create considerable uncertainty for some investors and may delay allocation of capital to the sector.

Cost of capital

There are a number of important factors affecting the cost of capital at present and into the future including: the perceptions of risk under CPRS and RET; the cost of funds and how this will change over the period till 2020; and the reweighing of risk and capital allocations between debt and equity providers. Findings include:

- The reward capital providers expect for the risk they accept in an investment has increased in general because of the credit crisis and in relation to investment in Australia as a result of CPRS and RET.
- A number of international investors in the Australian energy sector have already increased their hurdle rates as a result of the credit crisis.
- It is clear that the private sector's cost of funds has increased substantially as have some State Governments' regardless of debates over the theoretical calculation of cost of capital using tools such as CAPM and WACC.
- Debt costs have increased substantially in recent months with the differential between Commonwealth Government debt and BBB corporate debt (which would be equivalent to an electricity generator) now at 482.5 basis points as at 1 December 2008, resulting from a marked increase in the price put on risk and the lack of available capital.
- Debt providers have responded to reducing their exposure to risk by forcing equity providers to assume more of a project's risk. That is, a risk that can be reallocated away from a debt provider to an equity provider is likely to attract a higher price after reallocation.
- The credit crisis has resulted in capital providers being able to be very selective in the application of their limited capital, now requiring a higher return for the risk they bear. In other words, they expect their returns to increase to compensate for the same level of risk that they previously accepted for a lower return.
- CPRS and RET have increased risk, uncertainty and volatility, translating directly to risk for capital providers. These risks must be mitigated, managed and priced. Where the risk can't be removed completely it results in a higher risk premium being attached to the investments and therefore a higher return required to compensate for the risk.