

Adapting to a climate change era

The prospect of a carbon-constrained future and the desire to move to sustainable energy sources will not only require an unprecedented increase in Australia's use of renewable energy technologies, it is also expected to herald a substantial restructuring of Australia's energy supply system. At the second session of CEDA's InfraStructuring Australia conference series, sponsored by Clayton Utz and Ernst & Young, public and private sector delegates discussed the challenges of adapting our energy infrastructure to climate change.

Regardless of Australia's eventual climate change targets, and despite large differences between medium and high energy demand forecasts, delegates agreed that the physical and regulatory features of Australia's electricity system and market will need to adapt to accommodate a more diverse mix of fuels and technologies. Discussions focussed largely on the supply side, although delegates recognised the other half of the equation in terms of energy efficiency, smart meters and smart grids.

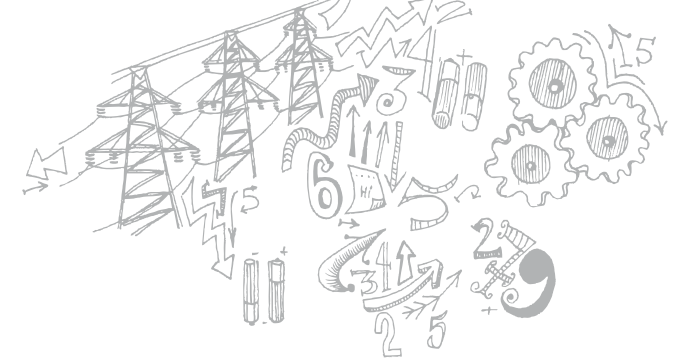
Vince Duffy, Director, Markets and Sustainability, Energy Division, Department for Transport, Energy and Infrastructure, summed up the rationale: "Given 50% of our emissions are energy, then any solution for addressing climate change literally comes into the energy sector. This will be a substantial task."

Delegates also agreed on the importance of a national scheme to price carbon. As one put it: "Can you imagine each state having its own scheme and overlaying that on top of the national electricity market and the gas market, let alone inter-regional

substrates we've got today, and then to actually handle different systems within the regions as a whole? It would be an absolute nightmare."

The consensus was that we need market signals to drive the correct economic outcome for Australia as a whole.

Graeme Dennis, Partner, Energy & Resources, Clayton Utz says, "The drive to renewable and sustainable energy, with incentive schemes for small-scale renewables and feed-in tariffs for solar PV [photovoltaic] and domestic wind generation, is likely to decentralise some generation and change the nature of our local distribution networks. Instead of being one-way carriers of energy, distribution networks will become complex webs carrying energy in multiple directions, with a need for smarter distribution switching controls and smarter metering."



“ Australia is energy rich in fuels. We have abundant coal, wind, solar, geothermal and gas. But the real challenge is how to convert those fuels into energy reliability and security for Australia. If someone wants to build a 2000 megawatt base load generator in the next five years, what technology would they use? How would they plan for that?”

Matt Zema, Managing Director and Chief Executive Officer, AEMO

Transforming Australia's energy capacity

Delegates heard that changes to the supply mix will continue at a significant rate. We can expect substantial growth in wind energy over the next five years and a shift towards gas as a major fuel source, as new gas supplies, such as coal seam gas, become available. Thus, wind and gas powered generation will need to be integrated in the national energy market.

Vince Duffy reported that South Australia was looking to significantly transform its energy capacity, with renewables already accounting for 19% of capacity. This pattern is being repeated across Australia (see Table 1).

Table 1. Increasing wind generation

State	Operating	Proposed
SA	870MW	1350MW
VIC	427MW	2600MW
NSW	186MW	2300MW
QLD	12MW	540MW
TAS	140MW	400MW

Source: “National Transmission Statement “, AEMO, Dec 2009

Dealing with an unpredictable wind supply

However, delegates heard there will be considerable challenges to including wind in the mix, with forecasting supply, and dealing with its often profound fluctuations, one of many issues.

Matt Zema reported that AEMO has developed the Australian wind energy forecasting system, AWEFS, which now monitors all of the nation's wind farms. “It actually takes input from the weather bureau and they actually predict on a half-hour basis what the wind farms will be doing mainly so that we can actually contemplate as they go up and down.”

However, forecasting is only one half of the battle.

According to Vince Duffy, 47% of Australia's installed wind capacity is coming to South Australia. “The Green Grid study calculated we could economically harvest more than 2000 megawatts of additional wind on the Eyre Peninsula, so the resource for renewable energy is available for exploitation in South Australia. The question is how to manage it.”

“If you have zero contribution from wind, you have to invest in something like open cycle gas turbine, which could be available to meet excess demand.”

Delegates heard that open cycle gas turbines are comparatively cheap to build, with a very low fixed cost of production. However, they are not as efficient as other technologies and use expensive gas.

Managing the gas and electricity inter-relationship

Matt Zema suggested the substantial growth in wind over the next five years and a major increase in gas generation will “change the energy mix, with the growth in gas-fired generation leading to major considerations regarding infrastructure and wholesale pricing.”

Vince Duffy agreed, pointing out that a large investment in open cycle gas turbines would require a more dynamic gas market.

“ We need a mechanism in the rules to get an efficient scale of development in the network, with a regulatory regime to recognise equitable sharing of network augmentation and development costs. We don’t want individual companies, or places like the Eyre Peninsula, seeking to do multiple small connections for only their own projects. That would not have an efficient outcome from a network perspective.”

Vince Duffy, Director, Markets and Sustainability, Energy Division, Department for Transport, Energy and Infrastructure

“Last year, the South Australian parliament passed legislative changes enabling the establishment of a short-term trading market...This will provide a more dynamic pricing mechanism for the gas markets, with a transparent pricing regime for uncontracted gas in real time.”

Matt Zema hopes this new gas wholesale market will bring price transparency, so people can see the interaction between the two markets.

“At the moment, the two markets operate to two separate rule books, so the interaction will look quite interesting. The short-term trading market will be introduced into South Australia and New South Wales in mid 2010. The Queensland government has also opted to put in a short-term trading market. Hopefully, they will have the Brisbane hub up by the middle of 2011.”

Creating scale efficient network extensions

Delegates considered the challenges of connecting wind farms, or other renewables, that are quite remote. “The connection of these remote sources to the grid is a further area for consideration,” said Matt Zema.

Delegates agreed that scale efficient network extension is a good idea, but were concerned about who pays for it and how risk will be allocated across various players and stakeholders in the industry. One delegate believed the biggest issue from a policy perspective is to “avoid an outcome where profits are actually privatised and losses are socialised.”

Moving ahead without a carbon price

Delegates agreed that the balance of plant - what technology to select - becomes problematic without a carbon price.

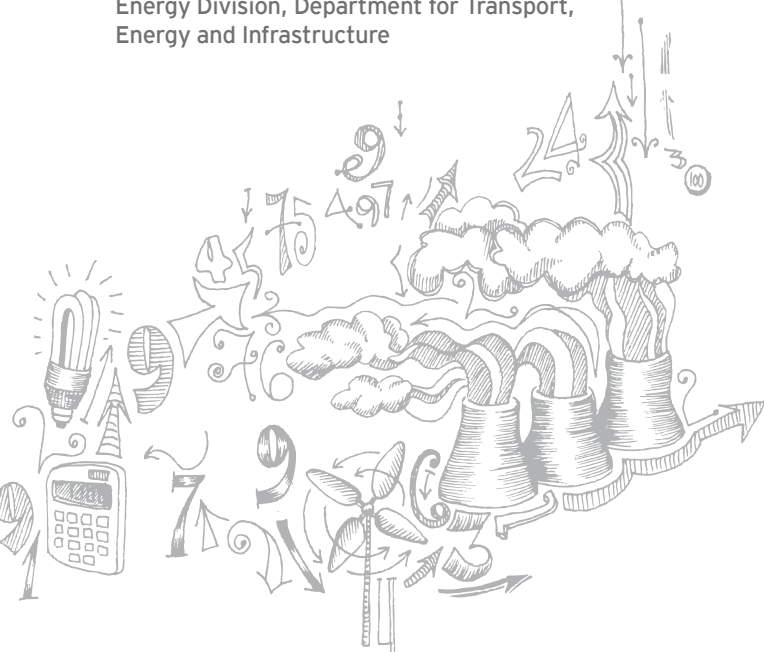
One was of the opinion that “the current shadow price of carbon means that no one’s going to go and dive into a coal plant. The project banks in our country, of which there are roughly 15 at the moment, just have no appetite to finance coal fired plants.”

Delegates believed Australia could be in danger having an under-capitalised power system, where price uncertainty leads to operators putting in top end plant when a different base load technology would be more efficient.

Preparing the grid for the future

Delegates heard that Australia has up to \$10 billion of transmission network projects committed to proceed, including around \$2 billion in routine works, over the next decade. This is on top of the work highlighted in last year’s National Transmission Statement, which focuses on inter-regional issues.

However, the questions remain: Who is going to be able to finance all these works and how are we going to decide which ones are economic?





Building sustainable international gateways

Western Australia's ports are vital gateways to global export markets. At the third session of CEDA's InfraStructuring Australia conference series, public and private sector delegates discussed the challenges of securing the productivity, resource efficiency and competitiveness of Australia's export infrastructure.

In an opening address by the Hon Dr Craig Emerson MP¹, delegates heard about the Federal Government's policy responses to the re-emerging challenges of the two-speed economy, in particular skills shortages and infrastructure bottlenecks.

"We are working to reduce the impediments stopping capital and people moving from the slowing sectors to ease the constraints on resources. As part of its move towards a seamless, national economy, COAG [Council of Australian Governments] is working on eight areas of competition policy reforms. They include: an increase in temporary migration; a national system of trade licensing - away from state licensing; and a national access scheme for infrastructure."

"But if our gateways are to be internationally competitive, so must our supply chains. This is why Infrastructure Australia is developing a national freight strategy, which will put an end to rail gauge economics. For examples, COAG is already creating national regulations for rail, maritime and heavy vehicles safety, in one instance replacing eight different maritime safety regimes with a single, national standard."

¹ Minister for Small Business, Independent Contractors and the Service Economy; Minister for Competition Policy and Consumer Affairs; Minister Assisting the Finance Minister on Deregulation

Investing in national infrastructure

While pointing to the Rudd Government's \$8 billion spend in national road, rail and port infrastructure, Dr Emerson said the Commonwealth "will not be able to do all the heavy lifting." He hoped for increased private sector investment - currently less than half our national infrastructure spend - and called for the state governments to consider going into debt to fund infrastructure development.

He believes private investment could be increased through a consistent, national approach for public-private partnerships (PPPs), smarter regulations, and better pricing and planning of gateways to make them operate faster and less expensively.

"We also need to remove the replication problem. Companies should get together and take a 30 year view of a region, where all players are contributing to expanding the infrastructure. That sort of strategic approach is better than ending up in the courts."

“ We want world class people tendering for our infrastructure projects. But the private sector needs opportunities to succeed. That will require cooperation by all parties.”

Bill Banks, Partner, Ernst & Young

Improving infrastructure access

Delegates discussed the issues around third party access regimes, which allow competitors in downstream and upstream industries to gain access to vital infrastructure services.

Nick Willis Johnson, Senior Consultant at ACIL Tasman, wondered whether these arrangements could account for the lack of private sector investment in infrastructure.

Dr Emerson pointed out that third party access regime is necessary, because it is uneconomic to have dedicated rail lines to every deposit. However, he agreed that the existing legislation was not working, creating uncertainty and delays in infrastructure projects. He reported constructive negotiations in the Senate around legislative changes that take out the gaming and uncertainty for infrastructure owners.

However he also believed that the West Australian Government has already “got its act together removing impediments”, noting significant expansion of export infrastructure capacity going on right now.

Solving labour supply issues

Labour shortages are another barrier to infrastructure expansion. Dr Emerson believes Australia will not be able to meet its future skills needs from the citizenry alone. “WA is out in front in terms of labour problems. We’re overwhelmed with businesses saying ‘we just can’t get skills labour’.”

John Langoulant, Chief Executive, Oakajee Port and Rail (OPR) commented on the difficulty of using the 457 visa system to recruit people in volumes. “In WA, we’ve already had a number of infrastructure projects stopped by expensive labour. In two years time, we’ll once more be relying on the 457 system simply to construct infrastructure. We hope government will be flexible around this issue.”

Western Australia port developments: expanding existing and new ports

The Hon Simon O’Brien MLC, WA Minister for Transport, briefed delegates on the unique dynamics of the WA transport chain: a huge, but sparsely populated land mass with most commodities located at remote sources of production.

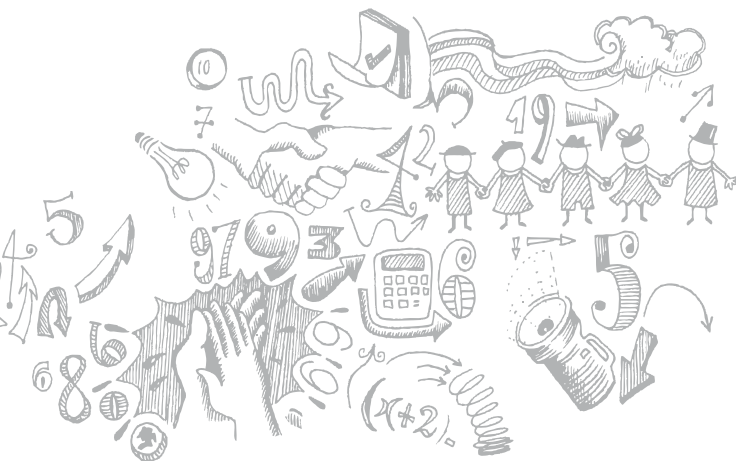
He believes WA has already proved itself as a world leader in addressing port sustainability in a mature way, in terms of dealing with environmental sustainability and land rights issues.

Building sustainable international gateways

According to John Langoulant, the keys to infrastructure provision are competition policy, cost benefit analysis and good planning. “Over a 30 year horizon, you never get it right, but it’s better to have a conceptual view.”

He reported that Oakajee is a complex and challenging project - to convert coastline to a major port - that takes the PPP model to a new level. “The partnership has peculiar features, with State and Federal Governments both putting in \$339 million each, although the Federal Government came into assist after the tender was issued and the successful bidder appointed.”

“The private partners are taking most of the risk on the project unlike traditional PPPs. There is no public sector service to support the infrastructure - we have to engage with the mining sector to ensure the project is successful - but it does have significant public sector support.”



“ Oakajee reflects competition policy at its fullest application, needing special state legislation to develop the rail line. Overall, the project will require over 100 different approvals, negotiations with over 60 land holders, and five different indigenous groups on native title issues - as well as dozens of supply contacts. Given this, our timeframe for operating by 2014 is impressively tight.”

John Langoulant, Chief Executive,
Oakajee Port & Rail

Mr Langoulant outlined the compelling business case for Oakajee, based on the strong long-term demand for iron ore, the lack of infrastructure in the Mid-West and Australia's need for a deepwater port that can accommodate Cape Class vessels.

“Oakajee Industrial Estate will attract other industries, stimulating the regional economy and creating a significant number of jobs. The project alone will require 3,100 workers at peak construction and the project will employ 250 once it's commissioned.”

He said OPR's business model was designed to closely align the transportation business with commercial interests of mines.

“We need their revenue to make it a bankable project. To date, our mine customer program is on track. OPR has determined our foundation customers and engaged 14 potential users of the infrastructure. The next step is to conclude supply chain agreements with the foundation customers by the end of the year.”

As Paul Gribble, Partner, Clayton Utz concludes, “With so many strategically important infrastructure projects in the pipeline this is the time for innovation, strong policy and a collaborative public and private sector focus on efficiency and sustainability at all levels.”

The next event in this CEDA conference series will be held in **Brisbane on 24 June 2010**, addressing Queensland's export and freight infrastructure. **Register online at: www.ceda.com.au/events**

New investment in infrastructure?

Since the CEDA event on 29 April, the Government has released its response to the Henry Review, including the central revenue measure - a so-called resource super profits tax (RSPT). The RSPT will apply to all existing and future non-renewable resource projects from 1 July 2012 and includes a 40% rate applied to relevant earnings on project capital in excess of a return at the 10 year bond rate.

The Government has stated that the RSPT will enable it to establish a new infrastructure fund for the states, worth \$700 million in 2012-13.

This infrastructure fund will help pay for the construction of the roads, rail, ports, electricity and water supply, and other facilities needed to eliminate infrastructure bottlenecks and ensure Australia can get its resources to market.

Given the difficulties the Government experienced with the Nation Building Economic Stimulus, it will need to work closely with states on the accountability for program expenditure, the establishment of the fund and the development of appropriate governance arrangements.

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