

Colin Dunstan

10th February 2005

Your ref: DEUS 04/2649

Energy Directions Statement Coordinator
Department of Energy, Utilities and
Sustainability GPO Box 3889
Sydney NSW 2001

Dear Coordinator,

Submission on Energy Directions Green Paper, December 2004.

This submission comments on 3 topics within the Energy Directions Green Paper:

1. "Demand Side Potential" (Green Paper, pages 15-16).
2. "Gas" (Green Paper, pages 36-38).
3. "The Way Forward - The Role of the New South Wales Government" (Green Paper, pages 13-14).

1. "Demand Side Potential"

Consider the impact of information provided to consumers, to assist their decision-making. The Green Paper mentions the impact of pricing, at page 16. The value of information should not be understated. For example, consider a household that uses 270 litres of hot water a day. Assume the water is supplied at 20°C and is heated to 55°C. The energy required for this is 4MWh a year. (4.184 joules to heat 1mL of water by 1°C.)

Comparing just 2 options:

- a. An electric hot water heater, and
 - b. A gas hot water heater.
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- a. Electric Hot Water
 - Up to 5 times more CO₂ than option 'b'.
 - Requires electric power generation and distribution infrastructure that is unnecessary for option 'b'.
 - This option produces 3.4 to 4.0 tonnes of CO₂ a year. (Green Paper, page 18: "The emission rates of existing [NSW] coal plant range from 0.85 to 1.0 tonnes of CO₂ per MWh produced.")

- With gas-fueled electricity generation, CO₂ emissions would be only 1.6 tonnes a year. (Green Paper, pages 19-20: "Combined cycle gas generation ...emits around 0.4 tonnes of CO₂ per MWh produced.")
- b. Gas Hot Water
- No electric power generation required.
 - Using gas to directly heat the water, only around 0.8 tonnes of CO₂ a year would be produced. (Assuming combined cycle gas generation has a thermal efficiency of 50%.) That is, half as much gas as used to generate electricity to heat the water.

See Government Policy, August 21, 2007:

"We'll end electric hot water..."

2. "Gas"

The Green Paper makes some positive comments on using gas, identifies a problem with gas supply, and lists options limited to the identified problem. The discussion is hard to reconcile with media reports of mid-January 2005, on the commercial value of Australian gas on world markets.

- a. Green Paper, page 36: "...Gas-fired generation produce less greenhouse emissions than some other sources of supply. In addition, the use of gas instead of electricity by industrial and residential customers ...reduces electricity demand." (See example, previous page.)
- b. Green Paper, page 37: "...Technically, it is possible to connect the vast gas reserves in the north-west of the country to New South Wales through pipeline construction. However, the cost of a major transcontinental pipeline would be several billion dollars. A major constraint on gas pipeline development..."
- c. Green Paper, page 37: "...There are 3 main options for increasing New South Wales' gas supply:
- Construction of a pipeline...
 - Increased production of NSW's gas resources ...
 - Construction of a pipeline ..."
- d. The Weekend Australian, 15-16 January 2005, page 26, and the Daily Telegraph, 15 January 2005, page 85:
 "... Resources Minister Ian Macfarlane will travel to South Korea to lobby for a new multi-billion-dollar long-term LNG contract. ...Mr Macfarlane's Seoul visit follows a similar trip to Mexico and California, where he also promoted Australian LNG."

"... The west coast of the US is expected to require about 20 million tonnes of LNG by 2025. Analysts conservatively estimate Australia could share contracts worth as much as \$50 billion ...Australian gas is rapidly becoming the world's fuel of choice, with billion dollar LNG agreements already signed with Japan and China...."

Large quantities of LNG are being transported around the world. Pipeline construction is not essential.

There are national policy considerations; If several States move to increase the use of gas-fired electricity production, any gas distribution infrastructure, that may include a pipeline, would be a shared national asset. NSW would not be solely responsible for the cost of construction. See, for example:

- Green Paper, page 20: "... the greenhouse intensity of brown coal in Victoria is much greater than New South Wales' black coal...."
- Green Paper, pages 19-20: "... A major attraction of gas is its relative greenhouse efficiency compared to coal-fired generation. Combined cycle gas generation, which is suitable for base-load capacity, emits around 0.4 tonnes of CO₂ per MWh produced. This is roughly half the level of modern, best-practice coal fired generation. ..."

See Government Policy, August 1, 2007:
"Iemma dumps coal power plan..."

3. "The Way Forward - The Role of the [NSW] Government"

Some comments on this relate to "Low Emission Technologies." (Green Paper, pages 38-40)

a. One possibility for coal as a low emission technology:

- "Geosequestration is also being developed to minimise the emissions of coal and gas-fired power stations..."
The ABC program "Catalyst" reported that a pre-production plant would be required to extract pure oxygen from the atmosphere. Then, new coal-fired power stations would be needed to burn coal in pure oxygen. Thirdly, a post-production plant would be needed, to liquefy the CO₂ produced. The community should be concerned about the capital cost and operating cost of this technology.
- "...Integrated Gasification Combined Cycle technology allows coal to be turned into gas. This results in a more efficient use of coal..."
I understand coal heated in the presence of steam produces CO and Hydrogen. Furthermore, CO heated with steam produces CO₂ and more Hydrogen. If CO₂ was liquefied, for geosequestration (?), from this mixture, the end product would be Hydrogen. Energy production from a Hydrogen-powered fuel cell is around 90% efficient.

- The Daily Telegraph, 14 February 2005, page 4 of "CARSGUIDE":
"High fuel costs and environmental concerns saw General Motors and Chrysler join the likes of Toyota and Honda by unveiling a mix of hydrogen and hybrid-powered vehicles."
- There will be a need to produce large volumes of Hydrogen for the next generation of motor vehicles. Coal gasification could be very important.

See Hydrogen production plans, May 19, 2007:
"Rio, BP unite for cleaner energy..."

b. Government Policy and the Rate of Technological Change:

- Commercially viable energy storage, regardless of source, is not very difficult. Solar energy, wind-power and off-peak electricity could be accumulated when available, and released to the electricity network when needed.
- Large, expensive capital items with long operational life-times, such as coal-fired power stations, reduce the opportunities for technological innovation.
- It would be a good thing if Government policies could promote a period of rapid innovation by multiple companies competing in the energy production market.

See NSW Government Microeconomic Reform, 2006:
"inject greater competition and innovation..."

Yours faithfully,

Colin Dunstan

[Signed: Colin Dunstan]



NEW SOUTH WALES

MINISTER FOR ENERGY AND UTILITIES
MINISTER FOR SCIENCE AND MEDICAL RESEARCH
MINISTER ASSISTING THE MINISTER FOR HEALTH (CANCER)
MINISTER ASSISTING THE PREMIER ON THE ARTS

DEUS Ref: 04/2649

- 3 FEB 2005

Mr Colin Dunstan

Dear Mr Dunstan

I refer to your correspondence of 11 December 2004, regarding the New South Wales Government Energy Directions Green Paper.

The Government recognises that more needs to be done to better manage our demand for, and use of electricity. Accordingly, on 6 December 2004 I released the Energy Directions Green Paper for public comment [copy attached].

The Green Paper presents demand and supply-side options for correcting the demand/supply imbalance likely to occur by the end of the decade, and canvasses policy reform options to address investment, greenhouse gas emissions, pricing issues, and planning and other environmental requirements.

I would encourage you to review the Green Paper and consider making a submission to the Department of Energy, Utilities and Sustainability if you have comments on it. Submissions are due by 25 February 2005. Unless a specific request is made for confidentiality, submissions will be made available to the public. Any requests for confidentiality must be clearly displayed on the front of your submission.

Thank you for bringing this matter to my attention.

Yours sincerely

Frank Sartor

■ ENVIRONMENT

We'll end electric hot water, Labor tells green voters

Stephanie Peatling

LABOR says that if it wins power it will phase out the energy-intensive electric hot water systems that use almost one-third of households' energy consumption.

By 2010 electric hot water systems would no longer be installed in new homes, and by 2012 they would be replaced by solar, gas or heat-pump systems in existing dwellings, Labor's environment spokesman, Peter Garrett, said yesterday.

By 2012 the measures would be equivalent to taking 1.7 million cars off the road, or reducing greenhouse gas emissions by 7.5 million tonnes, he said. "We know Australians want to embrace climate-friendly solutions, and we think this policy will be well supported."

If elected to government, Labor would keep the \$1000 rebate that the Federal Government announced earlier this year, which helps householders

cover the cost of switching from electric to solar and heat-pump hot water systems.

But Labor would take the policy further, introducing energy-efficiency standards for all water heaters and eventually replacing the use of electricity to run water

'Using electricity to heat water is like using a chainsaw to cut butter.'

MARK WAKEHAM
Greenpeace energy campaigner

systems with solar or high-efficiency gas or heat pumps.

The Government announced the \$1000 rebate earlier this year, which followed a policy by Labor that would offer low-interest loans to households of up to \$10,000 to be spent on a variety of measures to make homes more energy and water efficient.

Green groups yesterday welcomed Labor's announcement. A Greenpeace energy campaigner, Mark Wakeham, described it as "a positive and simple measure that will make a significant impact on household greenhouse pollution".

"Using electricity to heat water is like using a chainsaw to cut butter. It's completely over the top and excessive."

Mr Wakeham said it was good to see both parties paying attention to climate change, but that relatively small measures such as the one announced yesterday needed to be matched by a plan on reducing emissions.

"Australia needs to reduce its greenhouse pollution by 30 per cent by 2020 if we are to do our bit towards tackling climate change. Measures like phasing out electric hot water will make a contribution, but we also need legislated targets for reducing emissions, increasing the share of renewable energy, and a clear pathway to reduce our use of coal-fired power."

Iemma dumps coal power plan

Brian Robins

THE NSW Government has indicated it is willing to use gas for its next power station, moving away from coal for the first time.

The about-turn is the Government's first response to plans for a national carbon trading regime.

In a speech today, the Premier, Morris Iemma, will outline the case for the move to gas to supply the next so-called "baseload" power station, which will operate 24-hours a day.

A number of senior members of the Government such as the Treasurer, Michael Costa, support coal as the energy source for the next power station because of the boost it would provide to the coalmining industry.

Coal is the cheapest energy source by far, although a carbon trading regime, which the Federal Government is planning from 2011 or 2012, threatens to make coal much more expensive.

The problem for NSW in recent years has been a lack of sufficient gas reserves to supply prospective electricity industry demand.

"There may well be a sufficient gas supply to make gas-fired

baseload generation an alternative to coal," Mr Iemma will tell an infrastructure conference today.

The Owen inquiry examining the state's electricity industry is to be completed by the end of this month.

"The dates and load requirements [of new capacity] will be contained in Professor Owen's report but it is abundantly clear that we will need to increase our supply of electricity in the medium term.

"Secondly, while demand management and renewable energy will be part of the solution,

they alone cannot obviate the need for new coal or gas-fired generation.

A third theme to emerge from the inquiry was the prospect of sufficient gas reserves to give the Government the chance to use gas for baseload power capacity.

In today's speech, Mr Iemma will argue that the job of securing the state's energy supply "is being made more difficult than it should be thanks to the Commonwealth's dithering and delay in addressing climate change and spelling out the detail of its proposed carbon trading scheme".

"John Howard's failure to give a clear signal about a carbon price is like putting a blindfold on industry," Mr Iemma will tell the conference. "The Commonwealth must guarantee that any power station project that has reached financial close prior to the start of any carbon trading scheme must qualify for permit allocation."

The emergence of gas as a viable option in powering the state's energy needs follows optimism about the prospects for coal seam methane as a gas source. This is gas trapped in uneconomic coal seams which is being tapped increasingly in Queensland.

Several large gas-fired power stations are already on the drawing boards of state-owned power companies, most notably Delta Electricity which is working on plans for gas-fired power plants near Nowra as well as at Marulan.

Both of these power stations are planned to be so-called "peaking power" plants, which would be used only at times of power shortages, but which could be upgraded to provide "baseload" output if needed.

Rio, BP unite for cleaner energy

Canberra Times,
Saturday, May 19, 2007
page 15.

See submission,
10 February 2005

By Isabelle Oderberg

Australia's second-biggest miner, Rio Tinto, will team up with energy giant BP to produce cleaner energy in a joint venture called Hydrogen Energy.

Rio Tinto will initially contribute \$US32 million (\$A38 million) to the joint venture, which will develop decarbonised fossil fuel projects around the world.

Decarbonised energy converts fossil fuels such as coal, petroleum, coke or natural gas to hydrogen and carbon dioxide.

The hydrogen can be used to fuel a gas turbine to generate electricity, and the carbon dioxide is captured and buried in geological structures for permanent storage.

Rio Tinto's energy chief executive, Preston Chiaro, said, "Coal and uranium make up Rio Tinto's energy business.

"As a global coal producer, we're making an investment in decarbonised energy now, so we can help make coal a big part of the solution for clean power in the future. "Combined with our uranium assets, this move will position Rio Tinto and its shareholders to benefit from the advent of a low-carbon energy future."

Rio Tinto's hydrogen-fuelled power projects in Peterhead, Scotland, and BP's planned hydrogen power project in Carson, California, will be included in Hydrogen Energy.

BP Alternative Energy chief executive Steve Westwell said, "In both cases the capital cost will be over \$A1.22 billion."

While Rio Tinto acknowledged that it must assist in the development of cleaner energy, it denied it was seeking a new business avenue.

Mr Chiaro said, "We don't intend to be power producers . . . but we certainly are looking at pushing a little further downstream than we normally do from the coal mining to produce the hydrogen."

Mr Westwell said that the European Union's recent energy

policy meant that by 2020 all new fossil fuel plants in the EU must be built with carbon capture and storage. By 2030, all existing power plants must have been fitted with carbon capture and storage.

"As a first step towards that aspiration, the EU would like to see 12 of these projects up and running by 2015 to 2020," he said.

"It's very early in the process but it's going to accelerate very rapidly."

Hydrogen Energy will have its headquarters in Britain and will have an initial staff of about 75, seconded from BP and Rio Tinto.

The joint venture's chief executive will be Lewis Gillies, who previously headed up BP's hydrogen power business, while its chief financial officer will be Rio Tinto's former head of business evaluation, Peter Cunningham.

Rio Tinto's shares closed down \$1.39 at \$90.91.

Meanwhile, the chairman of Crossland Uranium Mines, Bob Cleary, said the uranium price was expected to surge past \$A146 per pound with no imminent signs of weakness.

Mr Cleary told shareholders at the Crossland annual general meeting yesterday that global warming concerns had put uranium well and truly back on the agenda.

"Uranium has just reached a selling price of \$US120 per pound, and there is nothing on the horizon to dampen the strong market demand for the power plant fuel."

The drivers for nuclear energy growth were well documented and included increasing global electricity demand and global warming concerns.

The demand for uranium was also expected to be driven by the proposed construction of 178 new nuclear reactors.

"The additional reactors under construction or committed for construction in the coming decade and beyond will only add to this pressure, so it is vital that additional discoveries of uranium are made and brought to production," he said.

-AAP

Creating a dynamic water industry

The [*Water Industry Competition Act 2006*](#) and the Regulations supporting its implementation (the [*Water Industry Competition \(General\) Regulation 2008*](#) and the [*Water Industry Competition \(Access to Infrastructure Services\) Regulation 2007*](#)) commenced on 8 August 2008. The objectives of the Act and supporting Regulations are to **encourage competition in the water industry** and to foster innovative recycling projects and dynamic efficiency in the provision of water and wastewater services.

Increasing competition in the metropolitan water market and water recycling are key actions in the NSW Government's [*Metropolitan Water Plan*](#) and [*State Plan*](#).

The core reforms introduced by the Act are:

- the establishment of a new licensing regime for private sector providers of reticulated drinking water, recycled water and sewerage services
- provisions to authorise IPART to arbitrate certain sewer mining disputes
- the establishment of a third-party access regime for water and sewerage infrastructure.

Key aspects of General Regulation include:

- ensuring new entrants and the public water utilities face similar obligations, where like services are provided
- strict licensing rules to ensure that drinking water meets Australian standards, that recycled water is 'fit for purpose' and that all services are delivered in a safe, reliable manner with minimal environmental impacts
- provisions to prevent retailers from disconnecting small customers for non-payment of debt and to require the implementation of NSW Government social policies, such as pensioner rebates.

On 7 May 2009 the NSW announced that the first licences have been issued under the *Water Industry Competition Act 2006*. The first licence was issued to construct, maintain and operate a new recycled water plant at Fairfield as part of the Rosehill Recycling Scheme that will initially provide 4.3 billion litres of recycled water a year to industrial and irrigation customers in Western Sydney. A second licence was issued to allow the high-quality recycled water to be transported to users through a network of retrofitted gas pipes.

A series of [*Questions and Answers*](#) has been prepared for the awarding of licences under the Act.

Background information

Meeting the challenge of securing greater Sydney's water supply in the long-term and in drought requires the innovation, resources and cooperation of both the Government and the private sector.

New South Wales is leading Australia in introducing competition to the metropolitan water industry by harnessing the resources of the private sector and directing the forces of competition to help secure greater Sydney's water future.

In November 2006, the Water Industry Competition Act 2006 (the Act) was passed by the NSW Parliament. The Act was developed by the NSW Government to encourage competition in the water industry and to promote the development of infrastructure for the production and reticulation of recycled water.

...

These are **significant micro-economic reforms by the NSW Government**.

Implementation of these new rules will **inject greater competition and innovation** into the metropolitan water and wastewater industries, starting with the greater Sydney and Hunter regions, and maximise the opportunities for water recycling projects.

[source: <http://www.waterforlife.nsw.gov.au/about/plan/competition>, 17 August 2009]

See submission,
10 February 2005