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Preparation is the key to nuclear option paying off

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From a cost perspective, it's important we leave our low-emissions energy options open, write ***David Jamieson*** *and* ***John Daley.***

Australians are notorious for betting on two flies crawling up a wall. The emerging debate over nuclear power seems to be part of that tradition.

Environmentalists fervently declare that renewables will be much cheaper than nuclear power even though the few solar power plants actually built at medium scale have been much more expensive than installed nuclear plants. Carbon capture-and-storage supporters are confident their technology can deliver at scale and at cost even though we are years from a practical demonstration of coal plants.

Nuclear power advocates affirm that nuclear will be the cheapest option even though real costs have been rising quickly for decades. These rival perspectives are betting on the outcomes of technology development and costs 15 years in the future. By comparison, betting on the fly closest to the door is a sure thing.

The worst outcome for Australia would be for the government to put all of its money on one fly – which comes last. No one wants a future in which Australians must pay more for electricity than the rest of the world. Any of the technologies being debated could turn out to be relatively expensive. Even experts are uncertain, and change their minds.

The US government's Energy Information Administration recently released updated costings for its forthcoming 2011 *Annual Energy Outlook* . Relative to its 2010 outlook, estimates of future electricity costs have changed significantly in just 12 months. Expected nuclear operating and maintenance costs are up 14 per cent; capital costs are up 37 per cent. Predicted solar thermal costs are down 10 per cent and solar photovoltaic down 25 per cent. There is every possibility these forecasts may change again by a similar magnitude – and possibly reverse direction – next year.

Resources and Energy Minister Martin Ferguson released a report last week suggesting nuclear power would be cheaper than coal-fired power stations and renewables like solar. But we don't know how much nuclear will cost to roll out in Australia, and whether – in 15 years – it will be cheaper or more expensive than renewables. With China ramping up its nuclear program, nuclear could become much cheaper. However, real costs for nuclear have been rising in France and the US over the past few decades as regulations have responded to safety and waste concerns. One of the few nuclear power plants actually midway through construction in a Western country is in Finland, and it is notoriously over time and over budget.

We are guessing about renewables. Rolling them out at large scale poses daunting technological and economic challenges. In 2025, renewables might be much cheaper. We cannot predict with certainty how they will evolve. Many countries are nervous about whether renewables will be able to meet all of their electricity needs.

Even in Germany, a country at the forefront of the renewables industry, there are doubts about whether it can reach its target of reducing emissions by 80 per cent without nuclear power.

Cost forecasting for low-carbon energy technologies is clearly a mug's game. So what should we do now? The best outcome for Australia is to roll out whichever technology turns out to be the best long-run option (including carbon costs and social impacts). Good policy takes uncertainty into account. The optimal response to uncertainty is usually to maximise your options (provided they are cheap to buy), and then try to delay exercising these options until the outcome is clearer. If you can, you buy the right to bet on any fly once it is close to the top of the wall.

In an energy context this implies spending small to ensure that Australia can pursue any of the likely technologies, and spending big on mass rollout once it is clearer which technologies are likely to be low-cost in the long run.

At the moment, Australia doesn't have a nuclear option. Basic institutions and regulations are not in place; planning has not been done. Given the inevitably long lead times for setting up nuclear power regulation, planning and construction, it will take at least 15 years, possibly 20, before the first nuclear power plant comes into operation here. And this start date will be delayed if we do not develop the institutions, legal and regulatory frameworks and skills base today, and start resolving concerns about safety, security and waste.

Getting these things in place does not commit Australia to nuclear power, but does enable us to start building more quickly if it emerges that nuclear power will indeed be substantially cheaper than the alternatives.

The concern is, if we do not prepare a nuclear option, then when the world gets serious about deep cuts to carbon emissions, Australia may be forced to use relatively expensive renewable technologies that can be deployed more quickly, resulting in significantly higher power prices than the rest of the world.

There are real uncertainties about the costs of both renewables and nuclear. Anyone who claims to know for sure which will be cheaper in 15 years has a promising career as a psychic. Energy is more important than flies on the wall – and we need more than a mug punt.

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