Solar policy trapped in the state shadowlands

All sides of politics agree that a German-style national feed-in tariff to encourage rooftop solar power makes sense. But Christine Milne’s bill to create the tariff is going nowhere. Peter Mares explains why

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ROOFTOP SOLAR POWER should have been an easy way for federal Labor to boost its green credentials. Instead, the Rudd government has badly bungled the politics and the policy making.

The pain could have been avoided by leaving the Howard government’s Solar Homes and Communities Plan unchanged. The $8000 rebate for residential photovoltaic, or PV, systems had been taken up with enthusiasm by householders keen to do their bit to help shrink Australia’s carbon footprint and at least gave the impression of government doing something constructive about climate change. Instead, Labor imposed a $100,000 per household means test on the rebate. When the industry screamed about cancelled orders, environment minister Peter Garrett inflamed the situation by declaring that the solar industry was in danger of “overheating.” (More than one disgruntled environmentalist was heard to quip that Garrett should be more worried about the planet overheating.)

In fact the means test may have done little to cool Australia’s solar industry. Despite continuing industry complaints, the government says applications for the $8000 rebate have actually increased sharply since the income test was introduced in the May budget (up from about 350 applications per week to about 750 per week). But politically the means test was an own goal. With a dash more vision, Labor could have dramatically improved on Howard’s solar scheme and won the praise of environmentalists, renewable energy enthusiasts and almost anyone concerned about climate change.

The Solar Homes and Communities Plan has been through several incarnations since it was first introduced in 1999. Initially it offered a rebate of $8250 for residential solar PV systems of up to 1.5kW in size. The following year the rebate was cut to $7500, and in 2003 it was reduced further to $4000. At the same time the maximum size of eligible systems was brought down from 1.5kW to 1kW. In 2007 the Howard government doubled the rebate, lifting it back up to $8000, but kept the 1kW size limit (which has had the predictable but undesirable effect of reducing the average size of installed systems from 1.6kW to 1.2kW over the life of the program).

Constant tinkering with the rebate creates uncertainty for industry and consumers. Instead of fiddling further by introducing a means test, Labor could have scrapped the rebate altogether and replaced it with a German style feed-in tariff. Despite some opposition from energy retailers and power generators, there was very little political downside to such a move. It would have offered substantial long term support to the industry and cut government budget outlays at the same time.

A feed-in tariff pays a premium for electricity supplied to the grid from rooftop solar panels (and potentially from other sources of renewable energy too). The costs are not paid by government but defrayed through a general increase in retail electricity prices. Since its introduction in 2000, a feed-in tariff has given cloudy Germany the fastest growing
photovoltaic solar power industry in the world. Germany installed more than 1000 megawatts of solar capacity in 2007, compared to just 12 MW installed in sunny Australia in the same year. The German industry now employs 42,600 people (Australia employs 1660) and rapid growth in PV solar power is evident in countries like Spain and Italy that have adopted the feed-in model.

A feed-in tariff has four main advantages over cash rebates. It doesn’t give suppliers the opportunity to increase the price in order to capture the rebate. It pays the biggest return to high-quality PV panels that will generate power over the long term, and discourages the installation of cheaper short-lived panels that might stop working efficiently soon after the rebate is paid. It increases the incentive to ensure that panels are optimally installed to maximise electricity generation and increase the return to householders from “sales” of electricity to the grid. And, most importantly, a feed-in tariff provides predictability. On the basis of the tariff offered, householders considering rooftop PV can calculate their annual return on investment with a high degree of accuracy and the solar industry can rely on a system of support that is not subject to the whims of politicians or the dictates of the budget cycle. This does not mean permanent subsidies for solar. A feed-in tariff is designed to reduce over time. The German tariff is set to reduce by 9 per cent in 2009 and 8 per cent in 2010. This acts as a spur to industry to pursue technological innovation, cost reductions and efficiency gains.

The economies of scale that result will also bring down prices. At an average of US$4 per watt, the price of installing photovoltaic cells in Germany is already significantly lower than it is in Australia (US$5.80). Although silicon is the second most abundant element in the earth’s crust, it accounts for roughly 45 per cent of the production costs of photovoltaic cells. The price has spiked because the highly skilled process of manufacturing the hyper-purified silicon for solar cells has not kept up with rapidly growing demand from industry, but as more silicon production comes on stream, supply should catch up with demand and prices should fall significantly.

In their respective reports on climate change for the Australian and British governments, Professor Ross Garnaut and Sir Nicholas Stern both recognised the superiority of feed-in tariffs over trading in carbon credits as a mechanism for encouraging the wide deployment of renewable energy at the lowest possible cost. These conclusions were confirmed in recent research by Ernst and Young which found that Germany’s feed-in tariff was delivering renewable energy at a lower cost per kilowatt hour than the UK’s system of tradable certificates. (The British government is now considering implementing its own feed-in tariff.)

Australian states and territories have also recognised the logic, and feed-in schemes have been introduced in South Australia, Victoria, Queensland and the Australian Capital Territory. Prior to the recent state election, both sides of politics in Western Australia also promised to a feed-in tariff, and New South Wales has just announced that it is moving ahead with a scheme. With the exception of the ACT, these schemes are deeply flawed.

The first problem is that the feed-in tariff is restricted to very small systems. Victoria’s scheme offers householders 60 cents per kilowatt hour of electricity fed into the grid, which is approximately four times the average retail price for electricity, but the feed-in tariff is limited to systems of 2 kilowatts or smaller. Roslyn Wright, who lives in Melbourne’s inner west, installed a 3kw system on her roof, so she receives nothing under the scheme and finds herself inadvertently subsidising the profits of Victoria’s private power providers. “What happens to the power we generate into the grid?” she asks. “The power companies are... selling-on the power we generate to other users.” Size limits also apply in Queensland and South Australia and the effect is to render PV solar power generation unattractive for many potential sites such as the roofs of commercial premises, educational institutions, offices, shopping centres and local government facilities. One justification for limiting the tariff to small schemes is that it will ensure that commercial generators do not double dip,
claiming the tariff for large scale renewable energy plants that would have been built anyway in order to meet the federal government’s mandatory renewable energy target of 20 per cent renewable energy by 2020. The ACT scheme gets around this problem by offering a feed-in tariff that reduces in inverse proportion to the size of an installation. (A commercial wind farm in the ACT would receive a zero tariff for electricity generated.)

The second flaw in the state schemes is that they only offer a feed-in tariff to photovoltaic solar power. A more broadly based scheme would provide encouragement for a wide range of potential power sources (such as small scale wind generators, solar thermal plants or co-generation using methane from animal waste, agricultural by-products or household rubbish).

The third and most serious flaw in the schemes (again with the exception of the ACT) is that unlike almost all the other schemes around the world, they pay for the net rather than the gross production of electricity. In a net scheme households are only paid for excess power generated (that is, total production minus household consumption). Under a gross scheme households are paid a premium for all the electricity generated by rooftop panels (including power immediately used in the home) and pay the standard retail price for all the electricity consumed (including the power generated from their own roofs). A gross scheme offers higher and more predictable returns to households.

The objection to a gross scheme is that it is more expensive, and the added cost will be borne by other electricity users as higher average prices are charged to all grid connected homes. This is true. But Germany’s gross feed-in tariff is estimated to have added just 2.2 euros to the average monthly cost of household power bills. At the same time, it has mobilised large amounts of private capital (the investment made by householders in installing the rooftop panels in the first place) for a public good (reducing greenhouse gas emissions) at minimal cost to government and the budget. Deploying widely dispersed, small scale rooftop generators also has other system-wide benefits: it reduces electricity wastage through transmission losses (because generation and consumption are closer together) and allows generators to delay or cancel planned investment in new large scale power plants. This last point is particularly relevant to Australia, where new installed capacity is often required to meet the peak loads that occur on hot summer afternoons as airconditioners are switched on. The output from rooftop cells peaks at the very time when additional power is most urgently needed in the grid. When the demand for power surges on hot afternoons, the spot cost of electricity in the national energy market also soars.

(This provides further justification for paying a premium for the electricity generated from suburban rooftops and suggests that the subsidy under a gross feed-in tariff is lower than a comparison with average electricity prices would suggest.)

There is also an equity issue here. Rooftop solar power is most likely to be installed by relatively affluent homeowners who can afford the required upfront investment, whereas the dispersed costs of the scheme will be felt most keenly by renters on low incomes in the form of increased power bills. But this problem is not unique to feed-in tariffs. At the core of most greenhouse gas reduction schemes are price signals designed to encourage consumers to change their habits. The inequities that result are best dealt with through the tax system or through other forms of compensation (such as weather-proofing rental and low-income housing stock to reduce energy bills).

And as with the German scheme, the general increase in electricity prices resulting from a feed-in tariff will be small. In a report prepared for the Clean Energy Council, Access Economics has estimated that a national feed-in tariff could see the installation of 3000MW of rooftop solar capacity in Australia in twenty years for a total investment of $15–$16 billion. The resulting increase in electricity bills would be in the range of $22–$23 per year for a typical household. Access Economics estimates additional system wide benefits: the deferral of 500MW in new generating capacity at a capital cost saving of approximately $610 million, savings of $149 million through reduced transmission losses.
and a reduction in Australia’s greenhouse gas emissions equivalent to 92 million tonnes of carbon dioxide (worth between $0.9 and $1.6 billion depending on the price of carbon).

Since its election, the Rudd government has moved to take Commonwealth control of greenhouse policy, rather than allow a hodge-podge of competing state-based schemes and incentives to proliferate. The national mandatory renewable energy target, MRET, is intended to harmonise various state-based targets; the Commonwealth’s soon-to-be revealed emissions trading scheme was an election promise designed to prevent the states from going it alone on pricing on carbon, and there is a federal program to create national minimum energy efficiency standards for household appliances.

It seems common sense that a feed-in tariff should also be coordinated by the Commonwealth. Indeed, earlier this month, noting the “strong industry, consumer and government support” for a feed-in tariff, politicians of all stripes on the Senate environment, communications and arts committee agreed that “a nationally uniform and consistent” feed-in scheme should be implemented “as soon as practicable.” Yet in the same [5] report, the majority recommended against supporting a bill drafted by the Greens senator, Christine Milne, to create just such a scheme at the national level. Instead, the committee referred the matter to COAG, the Council of Australian Governments. Here the record is not good. Feed-in tariffs have been on COAG’s agenda since March, and in speech in August the environment minister, Peter Garrett, promised that the October COAG meeting would “work towards a harmonised approach to renewable energy feed-in tariff.” The October meeting came and went without feed-in tariffs rating a mention. There was a little more progress on the issue at the November COAG meeting. Feed-in tariffs rated this brief mention in the official communiqué from a meeting that was, understandably, more concerned with dividing up hospital funding: “COAG agreed to a set of national principles to apply to new Feed-in Tariff schemes and to inform the reviews of existing schemes. These principles will promote national consistency of schemes across Australia.”

The agreed “national principles” are outlined in an [6] attachment to the communiqué. Although the language is opaque, it seems clear that the principles fall well short of providing a blueprint for the “nationally uniform and consistent” scheme that the Senate Committee recommended. For a start, the principles refer indiscriminately to “renewable” and “PV” as if the terms were interchangeable, making it unclear whether a harmonised system under COAG would restrict a feed-in tariff to rooftop PV systems or whether it would pay a premium for other forms of renewable energy. The principles also refer only to “residential and small business consumers” as potential electricity generators. This appears to exclude a large range of potential contributors to the grid from larger players in the commercial and public sectors (office parks, warehouses, shopping centres, car parks, educational institutions and libraries, for example). The principles also state that the “premium rate” paid for power fed into the grid under the scheme should be “jurisdictionally determined...” In short, states will continue to set their own feed-in tariffs rather than establishing a standard premium nationwide. This leaves a major question unresolved – would this supposedly “national” scheme offer a gross or a net feed in tariff? On the basis of the communiqué, it appears either would be possible and that the new feed-in tariffs promised for New South Wales and Western Australia will only add to the complexity of existing arrangements. (NSW is proposing net payments while WA is proposing a gross scheme.)

Such regulatory diversity is completely at odds with the prime minister’s core COAG agenda of achieving “a seamless national economy” and strengthens the argument for a single national system, established through federal legislation, as suggested by Senator Milne. There is little in the principles to dispel her [7] fears that even if COAG eventually reaches agreement on a nationally coordinated scheme, this is likely to produce a lowest common denominator outcome that perpetuates the weaknesses of the existing state systems. In the meantime, [8] Senator Milne’s bill for a national feed-in tariff is likely to go the way of most private members bills; it will be ignored until the next election is called, the
A feed-in tariff is not the silver bullet for reducing greenhouse gas emissions. Despite the success of Germany’s scheme, the 1282 gigawatt hours of electricity produced by solar cells in 2005 accounted for just 0.02 per cent of Germany’s total electricity generation. According to [9] International Energy Agency statistics, wind energy produced twenty times more clean energy (27229 gigawatt hours) for Germany in 2005 than solar PV. The rapid growth in PV power between 2005 and 2008 has no doubt increased the relative share of solar power in the German market, but even with a generous feed in tariff it will take a long time for rooftop panels to make a significant impact in Australia. The Access Economics scenario – 3000 MW of solar PV capacity installed over twenty years – would result in just 1.4 per cent of Australia’s electricity coming from PV systems in 2028. In terms of reducing greenhouse gas emissions, investments in wind farms will cut more carbon per dollar. This is another reason for implementing a broad feed-in tariff that is not restricted to residential solar panels but offers a premium to encourage all forms of renewable energy. And as the Germans would say, auch kleine Viecher machen Mist (even small creatures make manure). When it comes to carbon reduction, every little bit helps.

In any case, as BP Solar told the Senate committee, the aim of a feed-in tariff is not just “least cost carbon saving.” It is designed to compensate for the market failure that has hindered the development of renewable energy technologies like solar PV. A feed-in tariff provides price support that helps the industry to grow, “proves up the technology, drives down costs, diffuses the technology and makes it accepted.”

BP Solar’s recent decision to shut down Australia’s only manufacturing plant for PV cells suggests the company sees little prospect of effective federal government intervention to foster a sunny future for rooftop solar power in the near future.

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[8] Senator Milne's bill: http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;adv=yes;db=:group=;holdingType=:;id=;orderBy=priority,title;page=5;query=Dataset%3AbillsCurBef%20SearchCategory_Phrase%3A%22bills%20and%20legislation%22%20Dataset_Phrase%3A%22billhome%22;querytype=;rec=1;resCount=


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