Chapter 3

Issues with the bill

3.1 The previous chapter discussed broad policy questions that arise when considering FITs as a renewable energy policy option. This chapter looks at some specific issues raised in the context of the bill currently before the committee.

Gross or net metering?

3.2 The issue most discussed in submissions to the committee's inquiry was the basis on which electricity should be metered and a premium tariff paid to householders generating power from renewable energy sources.

3.3 There are two metering options: **net metering** (also referred to as net export, or import/export metering), and **gross metering**. Dr Prest outlined the differences between the two, when discussing the different FIT schemes currently in place:

> The [South Australian FIT] law only offers its incentive on a "net export" basis, that is, on the net quantity of electricity exported to the grid after accounting for in-home consumption. In other words, Net Export = Gross Production – Household Load. The liability for domestic consumption is reduced by the output of the PV system.
>
> Under a gross metering system (as in the ACT and Germany), PV owners receive the premium tariff for all electricity produced by their systems (whether consumed at home or exported). They pay full retail price for all of their household consumption. Gross production metering offers higher returns than under the 'net export' system.[1]

3.4 As the committee noted in its report on the Save Our Solar (Solar Rebate Protection) Bill 2008, submissions to that inquiry commented extensively on this issue in support of a gross feed-in tariff, and that preference was also prevalent in submissions to the current inquiry.

3.5 A gross FIT produces higher returns to the installer of a renewable energy generator, making investment in renewable energy more attractive, compared to a net FIT.

3.6 Individuals considering whether to invest in a renewable energy system find it difficult to estimate the economic benefits of their investment under a net FIT. A gross

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1 Dr James Prest, *Submission* 123, p. 36.

FIT allows investment decisions to be made with more certainty.[2] Mr Shone described the situation when an installer is setting out the benefits to a household:

> When selling a system I can say, 'If you install this you will generate around $1,000 or $1,500 a year. There you go.' That is impossible with net metering because it depends on the household behaviour of a person. As I said before, circumstances change. People retire or they have children, and all of a sudden they are using electricity during the day when they were not and they are not getting the returns. There is no guaranteed certainty; therefore we believe there will be a far lower uptake than there would be under gross metering.[3]

3.7 This may be critical if the investor is seeking a loan to assist with the capital costs of the investment. As Mr Shone pointed out, 'under net metering financial institutions will not lend you money because they do not know what you are going to do in your home'. [4]

3.8 The ATA commented that the choice of a net FIT, made by some Australian states, was out of step with prevailing practice:

> Of the 45+ international examples of feed-in tariff, Australia appears to unique in adopting this form of metering for feed-in tariffs. International examples almost universally value all of the electricity generated from renewable energy, and pay the generator via 'gross metering'.[5]

3.9 Some submitters argued that net metering was a poor approach because small installations would export little if any energy after meeting their own needs:

> It is likely that in the majority of cases, at least in residential homes, there may be little if any excess electricity generated. Consequently, many residential users would get little or no benefit from a net export model.[6]

3.10 Data from the South Australian government suggests that even modest size systems can export significant proportion of their output. Their study of over 1500 photovoltaic systems that had import/export metering (ie. net metering) indicated that they were on average exporting half their output, even though the mean system size was 1.5kWh.[7]

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2 Sunpower, *Submission* 49, p. 1.

3 Mr Bradley Shone, Energy Policy manager, Alternative Technology Association, *Proof Committee Hansard*, 9 September 2008, p. 13.

4 Mr Bradley Shone, Energy Policy manager, Alternative Technology Association, *Proof Committee Hansard*, 9 September 2008, p. 13.

5 ATA, *Submission* 100.

6 Australian Network of Environmental Defender's Offices, *Submission* 34, p. 6.

7 South Australian Department of Premier and Cabinet, *Submission* 68, Attachment A..

3.11 It has been argued that net is preferable because it encourages home owners to reduce energy use.[8] However, energy conservation still benefits the home owner under a gross FIT. Under a gross FIT, the householder has to buy the electricity they use at the regular tariff, so they make savings through energy conservation. Furthermore, the committee notes that net metering can have a significant drawback when it comes to energy conservation. A household using net metering cannot actually determine its own energy consumption, and therefore cannot use the meter to guide energy saving measures:

> …one of the big problems with net metering—we have seen this in South Australia and in Queensland and it is proposed for Victoria—is that it is impossible to see, first, the amount of electricity that has been generated by the renewable energy generator on the roof or in the backyard and, second, the total in-home consumption. With the net meter you get two figures: you get the amount that is exported, which is the generation minus what is being used in the home at the time, and you also get a second figure which is the amount that is imported, which is the household use minus what is being generated and used. It is not possible to know how much electricity has been consumed by that home.[9]

3.12 The Garnaut Climate Change Review also directly addressed the question of whether FITs should be based on gross or net metering:

> Some argue that a gross-metered feed-in tariff is undesirable because, from a sustainability perspective, it does not encourage embedded generators to consume less electricity, whereas under a net-metered scheme profits can only be made by exporting more to the grid. This reasoning is erroneous because the incentives to consume should come through the retail tariff paid for electricity, not through the feed-in tariff system.[10]

3.13 The South Australian government also argued that net metering had the advantage of utilising existing household electricity meters, reducing implementation costs.[11] While this is the case, metering replacement costs are an insignificant proportion of the total investment involved.[12]

3.14 Net metering was also opposed on equity grounds:

> The problem with net metering as opposed to gross metering is that it discriminates against people who are at home during the day, such as the

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8 South Australian Department of Premier and Cabinet, *Submission* 68.

9 Mr Bradley Shone, Energy Policy Manager, ATA, *Proof Committee Hansard*, 9 September 2008, p. 12.

10 Garnaut Climate Change Review, *Final Report*, October 2008, p.464.

11 South Australian Department of Premier and Cabinet, *Submission* 68.

12 A new or replacement meter would cost around $200 (See Mr Bradley Shone, Energy Policy Manager, ATA, *Proof Committee Hansard*, 9 September 2008, p. 12), while the total installation cost is likely to be upward of $8000.

> elderly, pensioners, retirees, single parents, and people with smaller systems who cannot afford the larger systems. Proportionately they are exporting less of their electricity to the grid, whereas with gross metering you are valuing the entire electricity that is generated. That figure of 50 per cent might be the average across the state but it might be made up largely of people with double incomes and no kids, people with large systems, or people with holiday homes down at the coast who are running a system.[13]

3.15 The committee notes the strong preference of stakeholders for a gross metering approach to FITs. It also notes that this is the prevailing practice outside Australia, and is the basis for the world's largest FIT schemes, such as in Germany and Spain. It recognises that gross metering has the advantages of being more attractive to customers and more certainty when it comes to investment planning.

3.16 The committee notes that there are a range of schemes in place around Australia. Net metering has been used in some jurisdictions. There has been mixed evidence received by the committee about whether the net metering approach has benefits in terms of installation costs for meters, or in encouraging energy conservation. The view of most experts appears to be that these benefits are either limited or nonexistent.

3.17 Information about FITs provided to the public by those jurisdictions with net metering schemes draws attention to the federal Solar Homes and Communities Program[14] and in one case indicates that the net metering approach has been designed to work in tandem with the federal rebate.[15] The committee does not wish to pre-empt discussions about a nationally consistent approach to FITs in COAG that are currently taking place, but recommends that governments consider carefully the evidence received by this Senate inquiry, as well as the track record of existing FIT schemes overseas, in designing a FIT framework for Australia.

Recommendation 2

3.18 The committee recommends that all governments consider carefully the evidence received by this Senate inquiry regarding metering, as well as the track

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13 Mr Bradley Shone, Energy Policy Manager, ATA, *Proof Committee Hansard*, 9 September 2008, p. 10.

14 South Australian Department of the Premier and Cabinet, July 2008, *Fact Sheet: South Australia's Feed-In Scheme for Small-Scale Solar Photovoltaic (PV) Installations*, http://www.climatechange.sa.gov.au/uploads/pdf/feed-in_fact_sheet.pdf (accessed 14 october 2008); Queensland Department of Mines and Energy, Solar Bonus Scheme, http://www.dme.qld.gov.au/Energy/solar_feed_in_tariff.cfm (accessed 18 August 2008).

15 Victorian Department of Primary Industries, 2008, *Victoria's Premium Rate for Solar Power Fact Sheet*, http://www.dpi.vic.gov.au/dpi/dpinenergy.nsf/LinkView/490170EA6AD2DBEACA257456000E547F4CAC723B1D538D66CA25740C000D2004/$file/FiT%20Fact%20Sheet-2jun08.pdf (accessed 14 October 2008).

record of existing FIT schemes overseas, in designing a nationally consistent FIT framework for Australia.

'Qualifying generator'

3.19 Schedule 1, section 5 defines terms to be used in the Act that are relevant to a FIT scheme as described by the bill. 'Qualifying generator' is defined in the bill as a renewable energy electricity generator that:

> (a) is installed after the commencement of the Renewable Energy (Electricity) Amendment (Feed in Tariff) Act 2008; and
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> (b) complies with the relevant Australian Standard; and
>
> (c) is connected to an electricity distribution network in a manner that allows electricity generated by the renewable energy electricity generator to be fed into the electricity distribution network, other than where the electricity distribution network is an excluded network; and
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> (d) generates electricity from a source listed in section 17 as an eligible renewable energy source; and
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> (e) forgoes participation in the mandatory renewable energy target scheme.[16]

3.20 The committee received no comments from submitters relating to points (b) and (c) above, indicating to the committee that their inclusion in the definition is uncontroversial. Discussion of point (e) indicated support for the approach in the bill.[17]

3.21 Points (a) and (d) of the definition were the subject of concern to inquiry participants.

Existing versus new generators

3.22 Point (a) of the definition of 'qualifying generator' indicates that people with existing renewable energy generators will not be eligible to be included in the FIT scheme proposed in the bill; and that only people who install such a system after the Act is introduced will have access to the scheme. Inquiry submissions were divided on this issue. In support for the bill, some submitters claimed that this would prevent 'double dipping'.[18]

3.23 Dr James Prest explained his support for point (a) of the definition:

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16 Renewable Energy (Electricity) Amendment (Feed-in-Tariff) Bill 2008, Schedule 1, s. 5.

17 Dr James Prest, *Proof Committee Hansard*, 8 September 2008, p. 9; Dr Muriel Watt, Chair, Australian PV Association, *Proof Committee Hansard*, 8 September 2008, p. 18; Mr Bradley Shone, Energy Policy Manager, Alternative Technology Association, *Proof Committee Hansard*, 9 September 2008, p. 13.

18 Australian PV Association, *Submission* 78.

> I guess the argument would be that it would be a windfall gain paid for by the community going to those early movers, and perhaps there would be a double-dipping principle that these people should not get multiple forms of incentive at the same time.[19]

3.24 However, Dr Prest and other submitters provided solutions to the issue of double dipping so that those who received a rebate and RECs could also choose to operate under a FIT scheme:

> My view would be that people would have to elect to choose whether they wanted the RECs or they wanted the feed-in tariff.[20]

> It would be easy enough to accommodate whatever previous subsidies they may have received, and they would be on a different tariff rate or a different cut-off point. I think that would be more appropriate, because I do not see any reason to punish those who have actually bitten the bullet themselves and gone ahead.[21]

3.25 Other participants were unhappy with the drafting of this definition. They indicated concern that it would unfairly penalise 'early adopters' of renewable energy technology who had installed the technology out of genuine environmental concern[22]. These submitters supported retrospectivity, to send a signal to 'early adopters' that taking initiative will be rewarded, thus making future 'early adoption' by those same market players more likely.[23]

3.26 BP Solar, which objected to point (a) of the definition, believed that a system of various tariffs depending on the age of the installation would not work on practical grounds, because '(r)etailers will find it expensive and problematic to manage separate systems for old and new installations and therefore pay different rates'.[24]

3.27 The committee also heard that point (a) of the definition was considered by some to be problematic because it is 'unclear as to how to pay owners that upgrade their systems'.[25] It was not clear whether and how owners who had installed a renewable energy generator prior to the introduction of the national FIT envisaged by the proposed bill, but then increased its capacity after the introduction, would be eligible for a FIT.

3.28 The Australian Network of Environmental Defender's Offices (ANEDO) raised two important concerns with an approach that allowed only new generators to

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19 Dr James Prest, *Proof Committee Hansard*, 8 September 2008, p. 8.

20 Dr James Prest, *Proof Committee Hansard*, 8 September 2008, p. 8.

21 Mr Peter Davies, *Proof Committee Hansard*, 8 September 2008, p. 17.

22 See, for example, Ethical Energy, *Submission 90*, p. 1.

23 Conergy, *Submission* 126, p. 10; Clean Energy Council, *Submission* 125, p. 10.

24 BP Solar, *Submission 116*, p. 26.

25 BP Solar, *Submission 116*, p. 26.

be eligible for a FIT.[26] If national FIT legislation were to supersede existing state and territory laws, then persons who had installed a system after commencement of a state scheme, but before the commonwealth scheme took effect, might find themselves at a disadvantage compared to new installers.

3.29 ANEDO was also concerned that 'limiting the scheme to those systems installed after the Bill's commencement date could delay a person's decision to install renewable energy generators'.[27]

3.30 The committee believes both these concerns could be surmounted, either by making renewable energy generators eligible for a FIT regardless of the date of their installation, or through other careful design of legislation. It notes, however that any disruption to the industry would be highly undesirable, and that the design of the legislation should be undertaken with the stability and sustainability of the industry in mind. This particular issue serves to underline the care that will need to be taken in moving to a nationally consistent FIT framework given the presence of pre-existing state and territory policies. The committee does note that the bill would allow the Minister to vary the FIT by location so that the rate can allow for pre-existing state or city (eg. Alice Springs) policies.[28]

What energy sources should qualify for a feed-in tariff?

3.31 Point (d) of the definition of 'qualifying generator' in the bill defines the range of energy sources that qualify for a FIT. This is achieved by reference to the definition of renewable energy sources under the *Renewable Energy (Electricity) Act 2000*. That definition includes the following sources:

(a) hydro;

(b) wave;

(c) tide;

(d) ocean;

(e) wind;

(f) solar;

(g) geothermal aquifer;

(h) hot dry rock;

(i) energy crops;

(j) wood waste;

(k) agricultural waste;

(l) waste from processing of agricultural products;

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26 ANEDO, *Submission* 34, pp 6–7.

27 ANEDO, *Submission* 34, p. 7.

28 Proposed new section 34D(4).

(m) food waste;

(n) food processing waste;

(o) bagasse;

(p) black liquor;

(q) biomass based components of municipal solid waste;

(r) landfill gas;

(s) sewage gas and biomass based components of sewage;

(t) any other energy source prescribed by the regulations.[29]

3.32 This definition is this far broader than that in any of the existing state and territory FIT schemes. This broadly inclusive approach has the advantage that governments and utilities do not try to 'pick winners' amongst renewable energy technologies. It also allows investors to choose the best technology for their situation.

3.33 However, different renewable energy technologies are at different stages of development, and can have very different costs of electricity generation (and different costs of greenhouse gas emissions abatement). One 2003 study compared electricity generating costs in developed countries, in terms of cents per kilowatt hour of generation. For coal, this cost was around 4.9 c/kWh, whereas for wind, the range was 3 to 8 c/kWh, for biomass 2.8 to 7.6 c/kWh, and for solar 8.7 to 40 c/kWh.[30]

3.34 Applying the same feed-in tariff to all these technologies could give the most cost-effective an unfair market advantage, while failing to encourage support of others that need financial incentives if they are to undergo a successful transition to being a mature renewable energy technology.[31]

3.35 EnergyAustralia objected to the approach for this reason.

> Under the proposed feed in tariff scheme, a price is set for renewable generation without taking into account the relative cost effectiveness of the technology. Under these circumstances, low cost renewable generators would not be able to gain a competitive advantage over more expensive renewable generation… In addition, by setting the price for a period of 20 years, the scheme would lock in this market distortion and would not provide ongoing incentives to reduce the costs of producing renewable energy.[32]

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29 *Renewable Energy (Electricity) Act 2000*, s. 17(1).

30 Ralph E. H. Sims, Hans-Holger Rogner and Ken Gregory, 2003, 'Carbon emission and mitigation cost comparisons between fossil fuel, nuclear and renewable energy resources for electricity generation', *Energy Policy*, Vol. 31, No. 13, pp 1315–1326.

31 BP Solar, *Submission* 116, p. 17.

32 EnergyAustralia, *Submission* 117.

3.36 EnergyAustralia's remarks also highlight the need for clarity about the goals of a FIT scheme. EnergyAustralia's comments contain three suggestions:

- That the proposed legislation sets prices without regard to relative cost effectiveness of the technology;
- That the policy would prevent low cost renewable generators from gaining a competitive advantage over more expensive technologies; and
- Setting a price for 20 years would not provide ongoing incentives to reduce the costs of renewable energy.

3.37 The committee will deal with each in turn. First, the committee notes proposed new section 34D(4) in the bill. This would allow different FIT rates to be set for different technologies, and thus would in fact allow the relative cost effectiveness to be taken into account.

3.38 Second, EnergyAustralia's concern about the effect of the policy on generators with different costs highlights the range of views, and confusion, about the purpose of a FIT. EnergyAustralia is correct to note that, under a FIT, low cost renewable generators may have a disadvantage. However, this is essentially the *point* of a FIT. As BP Solar, the industry associations and others have pointed out, a FIT is a transitional policy designed to assist leading edge renewable energy technologies through a transition to commercialisation and cost-competitiveness. If it did not advantage high-cost technologies, then it would probably be ineffective in achieving this aim. BP Solar illustrated this in its submission:

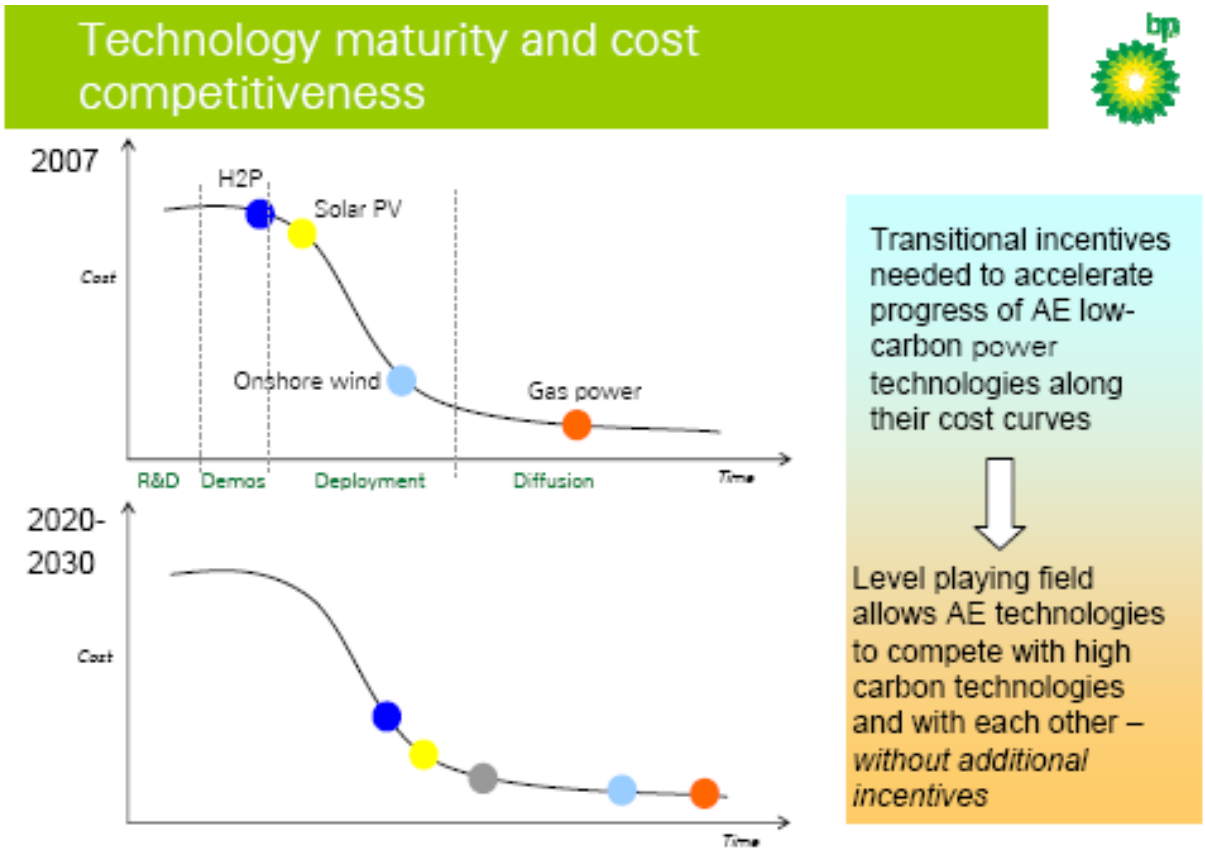

Figure 3.1 Maturation of technology leads to cost competitiveness

Source: BP Solar, *Submission* 116, p. 17.

3.39 Third, the FIT tariff is not set for 20 years: it is set for *each generator* for 20 years. However the rate available each year to new generators falls, a process often referred to as degression that is discussed later in the chapter. This process is designed *exactly* to do what EnergyAustralia is concerned about: to 'provide ongoing incentives to reduce the costs of producing renewable energy'.[33]

3.40 There were other concerns about the range of technologies covered by the definition in the Renewable Energy (Electricity) Act (and adopted by the bill). Environment Victoria objected to the inclusion of 'wood waste' on the list for renewable energies qualifying under a FIT scheme because:

> In some situations, whole forests can be cut down and are then found to be 100% waste and burnt to generate 'green power'. We do not want the waste 'tail' wagging the forest products 'dog'.[34]

3.41 The Wollongong Climate Action Network informed the committee that:

> We do not think a feed-in tariff should automatically apply to biomass. An evaluation process should be developed which considers criteria such as the total GHG balance of the particular case, water use, impact on the soil and impact of foregone food production.[35]

3.42 ANEDO objected to the inclusion of wood waste and all hydro sources in the bill's scope:

> ANEDO does not support the inclusion of wood waste and all hydro as an eligible renewable energy source. ANEDO has previously outlined its concerns regarding the inclusion of wood waste as an eligible source of renewable energy in the MRET scheme because of the significant environmental impacts of logging activities on our forests and biodiversity. ANEDO has also raised concerns about the inclusion of all hydro schemes as renewable energy sources in the MRET scheme because of the significant detrimental environmental impacts that new hydro electric power stations can have.[36]

3.43 The committee also notes that some of these energy sources are likely, if harnessed, to be the subject of very large-scale generation technology. Indeed, Ausra, in their evidence to the committee, discussed a proposal for a solar thermal plant that could power a city the size of Canberra.[37]

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33 EnergyAustralia, *Submission* 117.

34 Environment Victoria, *Submission 94*, p. 6.

35 Wollongong Climate Action Network (W-CAN), *Submission 113*, p. 1.

36 ANEDO, *Submission* 34, p. 7.

37 Mr Bob Matthews, CEO, Ausra, *Proof Committee Hansard*, 9 September 2008, p. 2.

3.44 Some submitters brought to the attention of the committee that an advantage of the bill in its current form is that is does not 'pick winners', with each different renewable energy source to receive a different FIT rate.[38] However, in light of the arguments put forward by participants, there may be a case for providing a separate definition of 'renewable energy source'[39] specifically for technologies to qualify for a FIT. Such a definition would need to be derived from a study of the impact, both financially and environmentally, of supporting a renewable energy technology through a FIT scheme.

3.45 The committee is concerned that the broad range of energy sources listed in the Renewable Energy (Electricity) Act is not necessarily appropriate to FIT schemes. There are two reasons to consider restricting the range of technologies eligible for FITs. First, it is important that the range of renewable energy policy instruments complement each other and not compete (or duplicate) efforts. A very broad FIT, such as that proposed in the bill, could potentially overlap too extensively with the MRET. It may not represent an efficient use of government resources in facilitating the installation of greater renewable electricity generation capacity.

3.46 Second, if FITs are to assist in the development and maturation of leading edge renewable energy technologies, they should be targeted at those technologies. One of the successes of the German FIT scheme is that it has seen a steady decline in the cost of installing PV systems. This is regarded as a key purpose of FIT schemes generally – which is why most FIT schemes steadily reduce the value of the FIT over time. This benefit can only be achieved if they are targeted at emerging technologies, and not at mature renewable energy technologies such as hydro. As Dr Prest put it, renewable energy policies:

> will be most successful if designed so that the MRET provisions apply for the end of the renewable energy and technology market closest to price-competitiveness and FIT provisions are applicable to the further-from market technologies.[40]

3.47 Nonetheless, the committee notes that the Bill allows the Minister to set a FIT rate of zero for any technology. This may be expected for large scale wind for example, since that technology clearly benefits from the MRET.

Connection to the grid

3.48 The committee heard from witnesses about potential barriers that would affect the success of the FIT bill in its current form, particularly in respect to connecting renewable energy sources to the grid. Section 34A of the bill requires electricity

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38 See, for example, Mr Bob Matthews, Chief Executive Officer, Ausra Pty Ltd, P*roof Committee Hansard*, 9 September 2008, p. 8.

39 This term currently defines the range of renewable energy technologies to which the *Renewable Energy (Electricity) Act 2000* applies. See s.17 of that Act.

40 Dr James Prest, *Submission 123*, p. 31.

retailers to 'permit an owner of a qualifying generator to feed into the grid electricity generated by the qualifying generator'[41]. Witnesses, however, suggest that this inclusion does not go far enough:

> However, to ensure a connection to the grid, an obligation to connect must precede feed-in. For example, the German law states that grid system operators shall immediately and as a priority connect plants generating electricity from renewable energy sources or from mined gas to their systems.[42]

3.49 Given the acknowledged success of the German model for a FIT, the requirement to connect to the grid may be strengthened by following the German example.

3.50 While not pursued as an issue of concern by a majority of witnesses, Dr Prest stated that the bill in its current form does not address the issue of the cost of connection to the grid, an issue that is addressed in overseas feed-in legislation.[43] As a result, there is scope for electricity retailers to allow owners of qualifying generators to connect to the grid, as required, but potentially charge them a great deal of money for doing so.

3.51 According to witnesses, the success a FIT in Australia may cause further difficulties with regard to grid connection should the grid not prove adequate to handling an influx of renewable energy generators. The bill is silent on who should bear any costs involved with upgrading or reinforcing the grid to ensure that it is adequate to meet demands. These costs again have the potential to provide a barrier to renewable energy generators. Dr Prest stated that:

> One of the points about feed-in laws is that there is an obligation to connect and then typically, overseas, there is a statement that the renewable generator should not be responsible for the cost of any grid strengthening, grid reinforcement or network reinforcement, so that extra cost is shared across the community rather than representing a barrier to investment.[44]

Annual payment of tariff

3.52 The bill provides for owners of a qualifying generator to receive payment for all of the renewable energy that they generate. Section 34G of the bill states that:

> The owner of a qualifying generator must lodge with the Regulator within 30 days of each anniversary of the registration of the qualifying generator

41 Renewable Energy (Electricity) Amendment (Feed-in-Tariff) Bill 2008, Schedule 1, Part 3A s. 34A.

42 Ms Keely Boom, Legal Officer, Australian Climate Justice Program, *Proof Committee Hansard*, 8 September 2008, p. 10.

43 Dr James Prest, *Proof Committee Hansard*, 8 September 2008, p. 8.

44 Dr James Prest, *Proof Committee Hansard*, 8 September 2008, p. 8.

> an annual return in the prescribed form indicating the metered energy produced by the qualifying generator.[45]

3.53 The proposal for an annual payment for electricity generated may not be a practical system for small renewable electricity produces who had taken out loans to buy their generators and who, consequentially, had repayments to make on their investment:

> Senator WILLIAMS—Wouldn't it also be advantageous to those people, if they were to borrow money to put in their PV system or whatever, to have a quarterly payment where they can then meet their commitments to the financial institution instead of waiting for once a year?
>
> Dr Watt—Yes.
>
> Senator WILLIAMS—If they are going to go and put in a system of 2½ kilowatts, which might be up to $30,000 or so, they will want a cash flow to help pay for that—if they want an incentive to do it, of course.
>
> Dr Watt—Yes. It is more likely that that cash flow outwards for them is going to be every month rather than even every quarter if they have added it on to their mortgage or so on, so yes. But it depends on the collection method and whether the revenue is there to pay back to the customer, so how that happens will determine it to an extent.
>
> Dr MacGill—A key part of it is that it has just been a historical thing that meters involved people having to walk around and read them, and it worked to do it every three months. The only thing on the meter was a single number, so you could subtract away and work out consumption. With the technologies emerging, it does not need to be that way, and time is money—absolutely. So we should be looking for more flexible and more real-time methods for payments.[46]

3.54 Dr MacGill's comments indicate that the issue may not be clear-cut, given that the frequency of payment may depend on how up-to-date the technology on each meter is.

Recommendation 3

3.55 The committee recommends that a more regular system of payments to generators be considered than the annual payments in the proposed bill.

Metering

3.56 Metering was addressed by a number of submitters. The committee recognises that the installation of meters and the capabilities of those meters is the responsibility of state governments. The Government of South Australia, which has adopted a net FIT scheme, informed the committee that the cost of replacing meters in order to

45 Renewable Energy (Electricity) Amendment (Feed-in-Tariff) Bill 2008, s. 34G.

46 *Committee Hansard*, 8 September 2008, p. 26.

undertake a gross FIT scheme was a factor in their decision of which FIT scheme to undertake:

> Those meters were already out there, already being read, already going through the billing systems of the distributor and the retailer, and tariffs were being attached and what have you. If we made the decision to move a gross metering scheme, in our minds we would have had to rewire a lot of people's households.
>
> Some people would have just said, 'It is too difficult' because their solar system was way down one end of the yard and their meter was up the other end. It would have meant extra wires that they did not need. For some people the change would have been relatively simple. We would have changed the metering arrangement at everyone's output to the grid. It would not necessarily have changed the billing systems and stuff like that, but that would have been a significant change.[47]

3.57 Dr Muriel Watt rejected this argument by the South Australian Government as being a valid reason for adopting a net FIT scheme over a gross FIT scheme, but she and Dr Ian MacGill both agreed that the lack of consistency in metering was problematic for a national FIT scheme. Dr MacGill added that:

> [W]e need a smarter interface between end users and the industry for a whole range of reasons, as Muriel has noted. Consistency is important there, but there is also a fairly high level of specification. Once you put these meters out there, they hang around. There are lots of 40-, 50- and 60-year-old meters out there, so there are good reasons to specify high, particularly with electronic meters, because it is not a whole lot more money to add additional capability.

3.58 The committee noted good arguments for more modern metering of electricity for homes. This has benefits beyond just the administration of FIT schemes.

Size of eligible installations

3.59 In chapter 1, FIT schemes across Australia were outlined. With the exception of the ACT legislation, each existing FIT scheme was capped in some way, often with more than one limit. The Victorian scheme for example limits both the size of individual installations, and the total generating capacity of all installations that will be eligible for the scheme. The ACT scheme, though not capped, reduces the FIT for large generators. The ACT legislation discounts the FIT rate to 80% of the full rate for generators between 10kWh and 30kWh in size, and 75% of the full rate for generators larger than this.[48] These levels may be further reduced by regulation.

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47 Ms Heather Smith, Principal Adviser, Sustainability and Climate Change Division, Department of Premier and Cabinet, Government of South Australia, *Committee Hansard*, 9 September 2008, p. 18.

48 Electricity Feed-in (Renewable Energy Premium) Act 2008 [Australian Capital Territory], http://www.legislation.act.gov.au/a/2008-21/current/pdf/2008-21.pdf (accessed 18 August 2008).

3.60 Concerns were expressed that restrictions on installation sizes would affect the sorts of installations that were supported, and this would determine whether the FIT would support development of the renewable energy industry:

> …just putting in one-kilowatt systems does not allow you that economy of scale that the 100 to 200 system would provide to bring the costs down in Australia. So that is a really important market for us to be looking at. There is also a whole new set of customers there in small industry, commercial, local government and that kind of size of customer that at the moment we are not even allowing to participate at all in the renewable energy market. They can really drive all sorts of different things that we have not even seen happen so far, so it is an important market to try and pick up.[49]

3.61 Ausra commented:

> South Australia, Victoria and Queensland all have feed-in tariffs that are strictly limited to residential photovoltaic applications and do not encourage the deployment of large scale solar thermal plants…
>
> Ausra supports the view of the Federal Government that there should be a consistent national approach to feed-in tariffs. This would provide greater certainty for business and greater clarity in operating across State and Territory boundaries.
>
> A national approach should not, however, be a lowest common denominator approach. It must build on the ACT approach and ensure that appropriate incentives are provided for the development of commercial solar operations.[50]

3.62 Dr Prest noted that the ACT approach, using discounted rates but covering all sizes of installation, is that adopted in most international schemes:

> This approach is consistent with international practice in Austria, Germany, Italy, Luxemburg, Portugal, Slovenia and Spain where different tariff levels are applied according to the plant capacity, with larger capacity plants (in MW) being paid a lower tariff.[51]

3.63 The committee found that the bill does not specify the scale of the renewable energy generation that it supports. However the committee acknowledges that the intent behind the bill is to support utility-scale production of renewable energy electricity, the cost of which would be shared by all electricity customers.

3.64 The committee has one concern about the effects of allowing large-scale generation capacity to be eligible for a FIT. A FIT effectively works as a system of cross-subsidy, in which all energy consumers subsidise the energy price received by

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49 Dr Muriel Watt, Chair, Australian PV Association, *Committee Hansard*, 8 September 2008, p. 23.

50 Ausra, *Submission* 122, pp 2–3.

51 Dr James Prest, *Submission* 123, p. 38.

renewable energy generators who are eligible for a FIT. One of the reasons that a FIT is economically advantageous is that the additional costs levied on consumers are relatively small, but can generate significant industry stimulation. However the effect on consumers' energy costs would be more noticeable if a FIT-eligible generator was providing power to, say, half of all consumers in a city or region.

3.65 The bill addresses this issue by providing for the Minister to vary the FIT according to the size of the installation. Larger generators can generally produce electricity at a lower cost and therefore require lower FIT rates to become viable. This effect is recognised in the ACT law, which lowers the FIT as the size of the generator gets larger. The Bill also allows the Minister to set targets for the installed capacity of each technology. If the predetermined target is achieved, that Minister has the flexibility to reduce the FIT rate as deemed appropriate. That is, the degression rate is not limited to 10 per cent per year (discussed below). An alternative way of achieving this is exemplified by the Californian scheme, which has a sliding scale that reduces the FIT benefit as the amount of generating capacity installed grows.

3.66 Another approach to limiting the costs of a FIT, reflected in current Australian state FIT schemes, is to limit which technologies are eligible for the FIT, and deliberately exclude technologies that are likely to be large scale. Each of these approaches has strengths and weaknesses, some of which were not discussed by witnesses before the committee.

3.67 In designing FITs, the committee considers it important to keep sight of the key objective, which is to assist the development and commercialisation of leading edge renewable energy technologies, rather than merely to provide a subsidy for renewable power generation. This objective will affect how installation size will affect eligibility for a FIT, as different technologies tend to operate in different size ranges.

Changes in FIT payments over time

3.68 In the previous chapter the committee pointed out that a downward trend in the value of FIT payments is necessary to achieve FIT scheme objectives of driving down the costs of emerging renewable energy technologies. However, there are many factors to consider in setting both tariffs and their variation over time, and many ways of structuring them to achieve this goal.

3.69 The different ways in which the value of a FIT can be varied over time include that it can be:

- Reduced over time for new installations, a process often referred to as **degression**, or as a depreciating tariff;[52]
- Indexed or unindexed;

52 Jeffrey Michel, 2008, 'The Case for Renewable Feed-in Tariffs', *Journal of EUEC*, Vol. 1, paper 1, http://www.euec.com/journal/documents/pdf/Paper_1.pdf (accessed 17 October 2008).

- Set as a dollar value, or set in relation to an existing energy tariff;[53]
- Available for varying periods of time;[54]
- Reduced over time as generation targets are met;[55] and/or
- Subject to periodic review[56] or review following achievement of targets.[57]

Decisions on all of these points are crucial in designing FITs, but the most significant is degression.

Degression of FIT payments

3.70 Dr Prest concisely summarised how degression works and its importance to FIT legislation. He explained that degression:

> refers to legislative provisions which reduce annually the amount of premium tariff payable by a specified percentage. For example in Germany in relation to Geothermal plants, the tariff payable is reduced annually by 1%. Tariff degression encourages early investment and speedy completion of projects. The measure is also designed to take account [of] technological innovation and learning by doing benefits, and to discourage investors from delaying the commencement of projects in the hope of reduced future costs.
>
> Tariff degression provides additional incentives for technology improvements and cost reductions. It serves to reduce risks of rent seeking and over-payment of feed-in premiums to those installations in later years which are more financially viable due to ongoing cost reductions. Ideally, rates of degression applied are derived from empirical observation of cost reductions for … each band of renewable energy technology.[58]

3.71 Conergy and others emphasised that the setting of the rate was critical:

> The reduction rate is crucial - and a very sensitive factor: if too low it will lead to less demand; if too high the market will not be able to handle the demand... A digression rate of 7% is recommended on the guaranteed FIT rate and every year, the tariff offered to newly connected systems is lowered by the rate.[59]

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53 Dr Muriel Watt, Chair, Australian PV Association, *Proof Committee Hansard*, 8 September 2008, pp 19–20.

54 Dr James Prest, *Submission* 123, p. 35.

55 See, for example, the Californian Solar Initiative: California Public Utilities Commission, *California Solar Initiative Program Handbook*, January 2008, http://www.gosolarcalifornia.ca.gov/documents/CSI_HANDBOOK.PDF (accessed 18 August 2008).

56 See, for example, the existing Australian Capital Territory scheme – see chapter 1 for detail.

57 See, for example, existing South Australia and Queensland schemes – see chapter 1 for detail.

58 Dr James Prest, *Submission* 123, pp 41–42.

59 Conergy, *Submission* 126, p. 3.

3.72 BP Solar thought that the maximum degression allowed by the bill was, at ten per cent, too high and should be limited to seven per cent.[60] The Alternative Technology Association thought the rate should be five per cent,[61] which is the rate for photovoltaics under the German scheme.[62]

3.73 Most Australian discussion of a FIT scheme focuses on the stimulation of photovoltaic generation. This may be in part because, with the exception of the new Australian Capital Territory legislation, all Australian schemes to date have been confined to photovoltaic units. However, there is a range of renewable energy technologies being developed around the world, including solar thermal, different wind technologies, and many others as well. These technologies are at different stages of development and facing different likely rates of reduction in generation costs.[63] The logical consequence is that they should face different degression rates, if FITs are going to have the desired impact of stimulating innovation and improvement in those technologies. This is reflected in the degression rates of FITs in the German scheme:

Renewable energy generation technology	Annual degression rate
Wind	2 per cent
Photovoltaics	5 per cent
Geothermal	Zero at present, then 1 per cent commencing 2010
Biomass	1.5 per cent

Source: German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, *EEG – The Renewable Energy Sources Act: The Success Story of Sustainable Policies for Germany*, July 2007, *Submission* 41 Attachment 4, p. 7.

3.74 While there is widespread agreement on the need for degression, the committee received almost no evidence explaining *why* particular rates should be adopted. Suntech declined to nominate a particular figure, instead focussing on the process by which a rate should be developed and implemented:

60 BP Solar, *Submission* 116, p. 26.

61 Alternative Technology Association, *The Design of a Feed-in Tariff for Australia, Submission* 75, attachment 1, p. 2.

62 German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, *EEG – The Renewable Energy Sources Act: The Success Story of Sustainable Policies for Germany*, July 2007, *Submission* 41 Attachment 4, p. 7.

63 BP Solar, *Submission* 116.

> The Government should consult widely to carefully design the value of the tariff and then undertake regular, publicly-reviewed modifications. Australia should consider pricing reductions via either an annual downward adjustment or an annual review based on review of current market prices, market impacts of new climate policy regulations, electric tariff reform, incentive program modifications, or other factors. Reducing the value over time should help build a self-sufficient industry.[64]

3.75 Fixing degression rates has the advantage of increasing transparency and certainty for investors, and setting production goals for manufacturers and installers. However, unpredicted factors that impact on production costs can make degression rates challenging to meet. In a previous inquiry, the committee heard about the significant impact on the renewable energy industry of major price rises for silicon, a major component of photovoltaic cells.[65] These price rises may have made meeting degression rate targets temporarily unachievable for the sector, which could have caused significant disruption to industry development. A 'pause' in the operation of degression rates would be necessary to overcome such disruption.

3.76 The committee recognises that the setting of the right degression rates is crucial to the success of a FIT, and should be addressed in a national FIT framework. While there needs to be flexibility in the setting of rates and they cannot be the same for every renewable energy technology, there also needs to be stability and predictability, so that research and development in the sector has targets at which to aim.

3.77 The bill aims to address degression rates by providing for a maximum rate of degression. It does not require a pre-determined rate of degression, but allows for the possibility of an increase of the FIT in the future. This approach also has the advantage of allowing degression rates to be revised in light of lessons learned in the early years of the scheme.

Recommendation 4

3.78 The committee recommends that tariff degression rates form part of the nationally consistent FIT framework, but that there also be capacity for degression rate 'pauses' to be instituted following a rate review procedure.

Recommendation 5

3.79 The committee recommends that tariff degression rates be technology-specific.

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64 Suntech Power Australia, *Submission* 127, p. 18.

65 Mr Robert Blakiston, Managing Director Australia, SunPower Corporation Australia, *Save our Solar (Solar Rebate Protection) Bill 2008 [No. 2] Inquiry Proof Committee Hansard*, 7 August 2008, p. 27; Senate Standing Committee on Environment, Communications and the Arts, *Save our Solar (Solar Rebate Protection) Bill 2008 [No. 2] Inquiry Report*, August 2008, pp 14–15.

Other evidence on the variation of FITs over time

3.80 In the bill's current form, witnesses noted the absence of indication of whether the FIT would be indexed to inflation. BP Solar (in a statement supported the Clean Energy Council)[66] believed that 'the FIT should be paid on all electricity generated by the system and should move in line with inflation CPI'.[67]

3.81 A FIT may be set as a price on top of whatever the standard retail tariff for electricity might be.[68] This was explained by Dr Watt:

> the feed-in tariff would best be placed as a premium on top of existing tariffs so your competitive market continues to operate and your retailers can offer you whatever tariff they wish and try and attract you as a customer, but the feed-in tariff stays on top of that. So if you are now paying, say, 16c a kilowatt hour then you would add your feed-in tariff on top of, say, another 30c or whatever it is, and you do not destroy the competitiveness of the market. I think that is a key point and a difference in how we will need to implement such a scheme in Australia compared to Germany. It also means that, as electricity prices go up—as we know, in all our states now we have quite high trajectories of electricity price increases regardless of anything to do with renewables—you are not eroding the feed-in tariff. If you have a fixed feed-in tariff that is inclusive of your retail tariff, as the retail tariff goes up the amount that you are being paid for your renewable electricity is going to go down unless it is kept as a separate item on top of your bill.[69]

3.82 The committee was unclear about whether setting FITs as premiums above energy prices, regardless of how those energy prices varied, was necessary in order to provide investment certainty. If investors are assessing the net present value of an investment or loan, then knowing the absolute value of their return would seem to be sufficient information on which to base a decision. It is not clear whether it is desirable to ensure that a FIT rate for current investors should stay above prevailing energy prices no matter how high those prices go. The rate should be high enough to attract investment and stimulate innovation; however it would be undesirable to impose greater costs on all energy consumers beyond those needed to secure that investment and innovation.

3.83 The committee heard numerous suggestions that FITs should last for 20 years, which is the period set in the German scheme, as well as many others.[70] The

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66 Clean Energy Council, *Submission* 125, p. 9.

67 BP Solar, *Submission* 116, p. 20.

68 BP Solar, *Submission* 116, p. 20.

69 Dr Muriel Watt, Chair, Australian PV Association, *Proof Committee Hansard*, 8 September 2008, pp 19–20.

70 Dr James Prest, *Submission* 123, p. 35.

Alternative Technology Association has suggested 15 years.[71] The committee did not receive sufficient evidence to comment on this point, but acknowledges that it is one of the many details that must be carefully designed as part of an effective FIT framework. The period should not necessarily be the same for every technology, a fact reflected in schemes such as that in France, which sets different periods for each renewable energy technology.[72]

Conclusion

3.84 The committee was fortunate in having the opportunity to take evidence directly from Mr Hans-Josef Fell, member of the German Bundestag, and one of the architects of Germany's feed-in tariff law. He was emphatic that the details of a FIT framework require very careful design if it is to succeed. The committee recognises that any FIT scheme will require detailed consideration of:

- Coordinated action in light of pre-existing state and territory schemes;
- The eligibility of different renewable energy sources;
- Tariff values available for different sizes of generator;
- The parameters within which FIT payments will decrease over time (degression);
- Whether and how FIT payments will be indexed; and
- Information management for the administration of the scheme.

3.85 The committee also had its attention drawn to some other design issues that, in the committee's view, seemed to be important matters, but were the subject of very little evidence given during the inquiry. These include in particular:

- The administrative design of the scheme, involving reporting by individual generators, payments by a regulator to generators and collection of a levy to fund the payments: a model criticised as unnecessarily complex,[73] and not supported by some key witnesses;[74] and
- Questions about the interaction between FIT eligibility and energy efficiency measures.[75]

3.86 In light of these issues, and given current inter-governmental discussions around a national approach to FITs, the committee recommends that the current bill

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71 Alternative Technology Association, *The Design of a Feed-in Tariff for Australia, Submission* 75, attachment 1.

72 Dr James Prest, *Submission* 123, p. 35.

73 BP Solar, *Submission* 116, pp 26–27; Dr James Prest, *Submission* 123, p. 39.

74 Conergy, *Submission* 126, p. 2; Mr Hans-Josef Fell, Member of the German Bundestag, *Proof Committee Hansard*, 16 October 2008.

75 Professor Andrew Blakers, *Submission* 1.

not proceed. The committee notes that the bill has been a useful mechanism to examine in detail the desirability, viability and practical issues surrounding FIT schemes in the Australian context.

Recommendation 6

3.87 While strongly supporting a nationally consistent feed-in tariff framework, the committee recommends the current bill not proceed.

Senator Anne McEwen
Chair