Greenpeace submission to the Senate Standing Committee on Environment, Communications and the Arts Inquiry into the Renewable Energy (Electricity) Amendment (Feed-in-Tariff) Bill 2008

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Inquiry into the Renewable Energy (Electricity) Amendment (Feed-in-Tariff) Bill 2008

Greenpeace welcomes the opportunity to make a submission to the Inquiry in to the Renewable Energy (Electricity) Amendment (Feed-In-Tariff) Bill 2008. We are pleased to submit the report *Energy [R]evolution: A Sustainable Australia Energy Outlook* to the Inquiry. The report was tabled in the Senate on the 23rd June 2008 by former Senator Lyn Alison. This submission makes reference to the report but speaks in more detail about the potential role of a national Feed-in Tariff (FIT) framework for Australia.

We would be pleased to present at any hearings that may be held by the Committee into this proposed Bill, and would also like to offer the opportunity for the Committee to hear representations from the co-author of the Energy [R]evolution report, Mr Sven Teske. Mr Teske is an engineer who has worked closely on renewable energy policy and implementation over the past ten years in many regions of the world but specifically in Germany. Mr Teske would be available to participate by telephone or video link-up to elaborate on any aspects of this submission and provide further information to the Committee.

Greenpeace is committed to assisting the Australian parliament in establishing a FIT policy framework that will ensure the rapid up scaling of renewable energy so we can relieve the grid of greenhouse-polluting fossil fuels.

Summary of key recommendations

- That the federal Government sets a target of generating at least 40% of Australia's electricity from renewable sources by 2020.
- That a framework be established to allow Feed-in Tariffs to apply to any renewable energy technology.
- That Feed-in Tariffs:
    - result in cost parity for large-scale renewable energy generators
    - ensure micro-scale renewable energy generators receive a payback on their investment
    - are based on maintaining const-competitiveness of renewable energy, rather than being driven by reaching a percentage share of the energy market.
    - are paid for all of the electricity produced by the renewable energy installation (i.e. gross metering)
    - have a declaration rate imposed, subject to annual review, which reflects changes in the marketplace and technological development
    - provide a guaranteed price for renewable electricity generators for at least 20 years
    - include time-of-day metering for solar PV systems
    - are rigorously and transparently monitored and audited.
- That consideration be given to introducing a geographically graduated rate that levels out cost-effectiveness of renewable energy technologies across Australia.
- That options be explored to integrate Feed-in Tariffs with Australia's current renewable energy policy framework, with the view to establishing Feed-in Tariffs as the primary policy driver for renewable energy.
- That the legislation ensures renewable energy generators wishing to access the Feed-in Tariff have mandatory access to the grid.

Background

Today, energy policy is critically linked to the threat of climate change. Avoiding catastrophic climate change will not occur unless a rapid and wide-scale transformation of the energy system takes place, dramatically curbing energy demand and transitioning from carbon-intensive fossil fuels to emission-free renewable energy.

Presently, stationary energy (electricity) accounts for 50% of Australia's greenhouse gas emissions[1], with the single-biggest source of emissions in this country coming from burning coal. Emissions from this sector are projected to increase by 64% from 1990 to 2020[2]. Tackling Australia's greenhouse gas emissions requires policy responses that will reverse emissions trajectories driven by expanding energy use, particularly electricity.

Opportunities exist to decarbonise Australia's energy supply system and turn Australia into a leader in renewable energy development, and technology transfer and export. However, policy action must be aggressively geared towards ensuring:

- All new electricity generation in Australia is from renewable sources.
- Deployment of renewable energy in Australia is scaled up as early as possible.
- Renewable energy quickly and substantially replaces fossil fuel electricity generation.
- The Australian renewable energy industry becomes a powerful international player.
- All renewable energy technologies with commercial potential are provided opportunities to be deployed on a large scale.
- Australia achieves energy security by moving towards a decentralised energy supply system that utilises a wide range of renewable energy sources.

A number of policy drivers currently exist in Australia to support renewable energy at the state/territory and national level. Variations of Mandatory Renewable Energy Target (MRET) schemes are in operation and are a proven mechanism for driving industry growth, their most consistent and major flaws being the low targets set. Several states/territories have also introduced variations of FIT policies, certain design elements of which have been rightly questioned. The establishment of a national FIT policy framework is an opportunity to rectify flaws in and harmonise state and territory schemes, as well as provide an alternative – and possibly preferable – support mechanism for renewable energy technologies that maximises their potential.

The Erneuerbare-Energien-Gesetz, a model for effective FIT schemes

The FIT is the most prevalent renewable energy policy in the world[3], having been in use in some locations for decades. The most commonly cited example of an effective FIT is the German Erneuerbare-Energien-Gesetz (EEG) law[4], introduced in 2000, which has been widely acknowledged as the driver behind Germany's wind and solar industries becoming globally dominant. The EEG replaced a scheme that set the retail price of renewable energy

[1] Australian Government Department of Climate Change, National Greenhouse Inventory 2006 http://www.climatechange.gov.au/inventory/2006/pubs/inventory2006.pdf

[2] Australian Government Department of Climate Change, Tracking to the Kyoto Protocol 2007 http://www.climatechange.gov.au/projections/pubs/tracking2007.pdf

[3] Rickson et al, *If the Shoe FITs: Using Feed-in Tariffs to Meet U.S Renewable Energy Targets*. Elsevier 2007, Vol. 23, Issue 4.

[4] More information about the details of the EEG can be found on the German Government website, many pages of which are translated into English. http://www.bau-energiekonzepte.de/foerdermittel/erneuerbare-energien-gesetz.html

at 90% of the standard rate; falling retail prices had been reducing the impact of the policy. The EEG provided a set tariff rate to renewable energy generators for 20 years. For solar PV, the initial rate was set at nearly 4 times the retail electricity price.

By the end of 2007, Germany had installed 22,247 Megawatts (MW) of wind energy capacity (27 times the installed capacity of Australia) and 2,800 MW of grid-connected solar PV[5]. Germany is also reaping the economic and social benefits of a burgeoning renewable energy industry. In 2006, US$14 billion was invested in the German renewable energy industry[6], which employed 249,300 people in 2007[7], a figure that is projected to rise to 400,000 by 2020[8].

Such massive growth in renewable energy has come at a minimal cost. The Alternative Technology Association cites German government calculations that the raw cost to consumers of the EEG is about 3% of the retail cost of electricity[9], or 35 cents per consumer per month on their electricity bill[10].

Beyond the German example, FITs have been lauded as the most effective policy mechanism to drive renewable energy industry growth[11].

Elements of a well-designed FIT

FITs can be applied to any source of renewable energy, and the design of each FIT must reflect the technology or energy source it is applied to. With this in mind, there are a number of design elements that are essential for the success of a FIT.

Achieving cost parity – setting appropriate tariff rates

The chief principle in developing a FIT is to meet the urgent need to facilitate widespread commercialisation of all renewable energy technologies, given the crucial role they will play in displacing greenhouse emissions from fossil fuels. The FIT rate should also reflect the environmental benefit of using renewable energy. Professor Ross Garnaut, in his draft report released at the beginning of July, stated that there are "valid economic arguments for an appropriate feed-in tariff regime, at levels commensurate with the associated external benefits"[12].

When considering small-scale renewable energy installations, such as micro wind or solar PV, it is crucial to provide a FIT scheme that is economically attractive to the purchaser. FITs that apply to these technologies should guarantee the owner a return on their investment after 5 years. Given that about 10% of owner-occupiers change addresses each

[5] REN 21 *Renewables 2007 Global Status Report*, http://www.ren21.net/pdf/RE2007_Global_Status_Report.pdf
[6] REN 21 *Renewables 2007 Global Status Report*, http://www.ren21.net/pdf/RE2007_Global_Status_Report.pdf
[7] German Government figures, http://www.erneuerbare-energien.de/files/pdfs/allgemein/application/pdf/ee_zahlen_2007_en_pdf.pdf
[8] http://www.renewableenergyworld.com/rea/news/story?id=52089
[9] Alternative Technology Association, citing: http://www.bmu.de/files/pdfs/allgemein/application/pdf/brochure_electricity_costs.pdf
[10] Alternative Technology Association, citing: http://www.bmu.de/files/english/renewable_energy/downloads/application/pdf/broschuere_ee_zahlen_en.pdf
[11] Comission of the European Communities, *The support of electricity from renewable energy sources*, 2005.
[12] http://www.garnautreview.org.au/CA25734E0016A131/WebObj/GarnautClimateChangeReview-FULLDraftReport,4July2008/$File/Garnaut%20Climate%20Change%20Review%20-%20FULL%20Draft%20Report,%204%20July%202008..pdf, p437

year, and far more tenants[13], FITs that apply to households and small-scale renewable energy generators should ensure the cost of solar installation is recovered by the vast majority of purchasers.

For large-scale renewable energy (e.g. wind farms, geothermal power, wave farms and concentrating solar thermal power plants), the FIT rate should essentially level out the competitive playing field between renewables and fossil fuels and preferably favour renewable energy technologies.

It may also be appropriate to use regionally-specific renewable energy resources to structure FIT rates. For example, a solar PV system that generates an average of 3.74 kWh per day in Brisbane will generate 3.15 kWh per day in Melbourne, due to variations in solar resource[14]. It may therefore be preferable to provide a higher FIT rate for solar PV in Melbourne than Brisbane. The benefit of applying this principle across various renewable energy technologies is that it reduces the possibility of generators focusing on sites that simply have the highest resource and pushing through developments that may not be best sited in those locations for other reasons, such as environmental or scenic impacts. Australian experience suggests it that this would be a useful tool in the development of wind farms. While a graduated rate across regions may not deliver the least cost option per unit of energy, it helps protect against inappropriate development and given the abundance of renewable energy sources in Australia, this is likely a minor concern.

Levelling the playing field geographically may also distort the fact that some regions will be more suitable of some renewable energy sources than others. However, it should not create the scenario where a renewable energy installation is built where there are insufficient natural resources available. Further, such is the urgency of the need to ramp up the deployment of renewable energy, it is essential to make as many renewable energy sources as possible attractive nationwide.

Appropriate rate of tariff declination

A strong FIT will bring specific technologies closer to cost parity with other sources of energy. The FIT rate will need to decline over time, reflecting the growth and increasing competitiveness of the technology, as well as technological improvements. The declination rate should be subject to annual review by the Minister to ensure the tariff rate continues to decline in line with technological development and changes in the marketplace. This will likely be influenced by the introduction of emissions trading, with the proposed Carbon Pollution Reduction Scheme coming into effect on 1 July, 2010, altering marketplace parameters.

Time of use FIT rates for solar

A major advantage of solar energy is that it passively produces its maximum output when demand is high. During times of peak energy demand, the National Electricity Market wholesale electricity price often soars into the hundreds of dollars per MWh.
Ramping up production and installation of small-scale renewable energy sources such as solar PV would alleviate pressure on a national grid, the rigid and centralised structure of which places it under immense pressure when energy demands are high. Presently,

[13] Australian Bureau of Statistics 2006 Census Data, http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Chapter9002008
[14] http://www.originenergy.com.au/files/bcse_solar_elec_from_sun.pdf

network service providers are spending $24 billion over 5 years on infrastructure upgrades to cope with increasing demands[15]. These costs could be avoided by decentralising the supply of renewable energy and moving electricity production closer the consumer, and thereby relieving pressure on the national grid.[16]

The tariff rate should reflect the technologies' contribution to the energy grid at peak times, and a stratified rate should be established where energy produced at peak times attracts a higher tariff rate.

Gross metering

Greenpeace vigorously supports the proposition that the FIT is paid for all the electricity generated by the system (gross metering). Generators must receive the FIT rate for all of the electricity they produce, calculated separately from energy that may be used by the generator. Several Australian states have introduced net metering, which only pays generators for the excess electricity fed into the grid. This takes much of the impact out of a FIT, as many owners will be using the electricity generated throughout the day and receiving vastly lower returns. Net metering also provides less certainty about the payback period, as it is dependant on patterns of behaviour by the generator owners. It can also discriminate against solar system owners who are more likely to remain at home during the day (e.g. retirees or stay-at-home parents). Professor Garnaut, in his draft report, noted that there may be no exported energy from systems attached to businesses and households that use energy throughout the day[17]. He also notes the value of the electricity from solar PV systems limiting network distribution losses and costs of augmentation, factors that justify gross metering being an appropriate element of a FIT scheme.

The effect of net metering in failing to generate strong renewable energy drivers has been observed in the United States. With the absence of alternative policy drivers, the Californian and Texan examples of a FIT did little to advance the growth of renewable energy[18].

National FIT schemes must provide the premium tariff rate for all of the energy produced by the generator, the amount of electricity used by the generator then purchased back at the standard retail rate. Greenpeace recommends establishing a dual metering system for this purpose, whereby one meter records electricity generated, the other electricity consumed, applying the FIT and retail rates to these respectively.

20-year power purchase agreements

It is essential that the generator is guaranteed a tariff rate for at least 20 years, especially for large-scale renewable energy. Providing market certainty for renewable energy is an issue that urgently needs resolution in Australia, given the stop-start nature of existing policies such as the MRET and Photovoltaic Rebate Program (PVRP). By guaranteeing the

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[15] Calculations first cited by the Alternative Technology Association http://www.rpc.com.au/pdf/fit_position_statement.pdf

[16] The benefits of decentralised energy are detailed in Teske, et al., *Energy [R]evolution: A Sustainable Australia Energy Outlook*, 2008, Greenpeace.

[17] http://www.garnautreview.org.au/CA25734E0016A131/WebObj/GarnautClimateChangeReview-FULLDraftReport,4July2008/$File/Garnaut%20Climate%20Change%20Review%20-%20FULL%20Draft%20Report,%204%20July%202008..pdf, p437

[18] Sawin, J., Policy Lessons for the Advancement & Diffusion of Renewable Energy Technologies Around the World, 2004. http://www.renewables2004.de/pdf/tbp/TBP03-policies.pdf

FIT rate current at the time of installation is paid for at least 20 years, generators will be provided the certainty required for sustained investment.

Transparent governance and rigorous assessment

Greenpeace supports the rigorous auditing and reporting on the effectiveness of any national FIT schemes. An independent body should audit the scheme on an annual basis. Greenpeace supports the proposal that a Register is established to maintain records of the scheme, and recommends that the Regulator reports annually to the Minister with an assessment of the scheme's effectiveness and projections of growth in the energy source and changes in the market, so that the Minister can make decisions on the declination rates of tariffs.

Integrating a FIT in the broader climate and energy policy context

A number of options exist for the integration of FITs with the broader policy framework on climate and energy that includes such schemes as the MRET, Carbon Pollution Reduction Scheme (CPRS) and various rebates and tax incentives.

It should be stated initially that the most effective policy options to reduce greenhouse gas emissions from energy are in energy efficiency. The simplest, quickest and most cost-effective ways to reduce energy emissions are to use less energy. Consideration should be given as to how energy efficiency measures in homes and businesses using micro-scale renewable energy can link to feed-in tariffs so as to provide incentives to improve efficiency in parallel with generating renewable energy. For instance, it may be possible to provide an incentive of a slightly increased FIT rate for owners who have met certain energy efficiency criteria.

Presently, the Government is developing a system of Emissions Trading, the Carbon Pollution Reduction Scheme (CPRS). This will ultimately put a price on carbon pollution that will adjust the marketplace somewhat. Changes in the marketplace as a result of a CPRS should be a factor in the Minister's adjustment of the FIT declination rate. However, the experience of a European Emissions Trading Scheme was that, due to a range of factors, the renewables industry was not significantly boosted by the ETS. The European countries that have developed strong renewable energy industries are typically those with strong renewable energy policies in their own right, such as Span and Germany, who have adopted FITs.

Primarily, the issue was a lack of long-term signal from a fluctuating carbon price. Additionally, pricing carbon will favour the least cost abatement options within the energy sector. This would likely be energy efficiency, which Greenpeace supports, but we may also see a shift towards "not as polluting" energy sources, which will be insufficient in the long run for decarbonising the economy. There is no assurance that the CPRS will deliver gains for renewable energy alone and should be merely one factor when the Minister determines the status of the energy marketplace and the FIT declination rate.

The experience of operating different policy drivers for renewable energy has been that FITs are demonstrated as more effective in delivering large amounts of renewable energy than certificates systems such as the Mandatory Renewable Energy Target (MRET) or Renewables Portfolio Standard (RPS) policies[19]. FITs are also consistently the more cost-

[19] Comission of the European Communities, *The support of electricity from renewable energy sources*, 2005.

effective policy option[20]. Where an MRET can be designed with too much flexibility to provide long-term market certainty for renewables, the economic parameters for FITs are set, the strongest laws having the longest power-purchase price guarantees, and provide greater certainty to the industry.

A common misconception of a FIT is that it is not compatible with an MRET. In fact, the opposite is true in that FITs can strengthen or complement MRET schemes and other policies. There are important differences between MRET schemes and FITs that can be used to full advantage when building a vibrant renewable energy industry. In the U.S., hybrid policy approaches are allowing FITs to be incorporated into existing renewable energy targets, or developed in tandem with such targets[21]. Options include the use of FITs to increase the contribution of specific renewable energy sources within an MRET or excluding sources from an MRET and using FITs as the sole driver. In 2007, eight US states had specific goals for individual technologies incorporated into an RPS policy framework[22].

MRET schemes typically favour the most commercially developed technologies, as they set parameters within which various renewable energy sources are forced to compete for available space. However, meeting the emission reduction challenge of climate change will require all available renewable energy technologies to be developed to large-scale commercial deployment. A well-designed FIT can benefit technologies at earlier stages of maturity, to accelerate their development and maximise the potential contribution of all renewable energy technologies[23].

The Council of Australian Governments (COAG) is presently exploring the design of an expanded MRET. The discussion is centred on an MRET of 20% by 2020. Greenpeace Australia Pacific has commented on the design elements of the scheme[24] but principally, recommends that the target be set at least 40% of electricity from renewable sources by 2020. Modeling commissioned by Greenpeace has demonstrated that this is entirely possible with presently available renewable energy technologies.[25] The report of this modeling will be included as part of this submission.

A 40% renewable energy target presents opportunities to combine the MRET and a FIT to reach a proportion of renewable energy that reflects the principles stated on the first page of this submission. The best option is that the MRET be used to drive technologies that are further along the path to large-scale commercialisation and exclude more emergent technologies, which are driven separately by FITs. This will open up more space within an MRET scheme for the established renewable energy sources and accelerate development of sources that might currently struggle to compete under the MRET. Therefore an overall

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[20] Huber, C., et al, *Economic Modeling of Price Support Mechanisms for Renewable Energy: Case Study on Ireland*. Energy Policy, 2007.
[21] Rickson et al, *If the Shoe FITs: Using Feed-in Tariffs to Meet U.S Renewable Energy Targets*. Elsevier 2007, Vol. 23, Issue 4.
[22] Rickson et al, *If the Shoe FITs: Using Feed-in Tariffs to Meet U.S Renewable Energy Targets*. Elsevier 2007, Vol. 23, Issue 4.
[23] Midttun A., and Gautesen, K., *Feed in or Certificates, Competition or Complementarity? Combining a Static Efficiency and a Dynamic Innovation Perspecitve on the Greening of the Energy Industry*, Energy Policy, 2007.
[24] Greenpeace's submission is expected to be uploaded to the Department of Climate Change website shortly http://www.climatechange.gov.au/renewabletarget/consultation/index.html
[25] Teske, et al., *Energy [R]evolution: A Sustainable Australia Energy Outlook*, 2008, Greenpeace.

target for renewable energy-powered electricity can be set at 40% by 2020 or more and FITs be used to deliver the remaining proportion of renewable energy.

The success of the Photovoltaic Rebate Program has indicated a clear public desire to access and purchase renewable energy if made affordable. However, the uncertain nature of the PVRP (a result of changing rebate rates and recent restrictions placed on its availability) and the fact that it may favour the disproportionate purchasing of cheaper, poorer quality systems is not in keeping with the principle of boosting the industry to the point where it displaces greenhouse-polluting forms of energy. Greenpeace supports rebates and other smaller incentives to encourage public investment in renewable energy but recommends that such schemes are subsets of long-term structural drivers for renewable energy.

The FIT obviously cannot apply to off-grid renewable energy generation, which nevertheless has a potentially significant role to play in energy security in remote areas, as well as displacing fossil fuels such as diesel for electricity generation. Currently, successful rebate programmes are in operation for remote and off-grid users of small-scale renewable energy, such as solar PV. Funding for existing rebate programs could also be channeled into policies that encourage the uptake of off-grid renewable energy.

Greenpeace comments on the FIT explanatory memorandum
In the explanatory memorandum, the purpose of the bill is described as to:

> *provide greater financial support for the commercialisation of a broad range of prospective renewable energy technologies, particularly those that are generally unsupported by the mandatory renewable energy target scheme*

Greenpeace would prefer to see the purpose of the FIT worded as a support mechanism applicable to all renewable energy technologies, regardless of the stage of development and the extent to which they are supported by the MRET scheme. It is true that technologies are at various stages of commercialisation and scale. It is also the case that the MRET will likely favour technologies more readily deployable (e.g. wind, biomass). However, FITs should be considered in relation to all technologies, regardless of whether or not they are already supported by other schemes and are at a more advanced level of development. The imperative for the establishment of FITs is the urgent need to advance the commercialisation of renewable energy to replace fossil fuels as rapidly as possible, in order to mitigate the greenhouse emissions from the stationary electricity sector. Therefore, if a renewable energy technology is relatively developed and commercialised it should still be eligible for a FIT, as this may still be a preferable policy option for the following reasons:

- FIT schemes have been demonstrated to be more cost-effective than MRET-style certificate schemes (as discussed on the previous page).
- FIT schemes have also been demonstrated to drive the commercialisation of renewable energy faster than MRET-style certificate schemes (also discussed on the previous page).
- An MRET may essentially act as a cap for the renewable energy sources covered by the scheme, whereas FITs can be structured to keep renewable energy cost competitive with fossil fuels on an ongoing basis, rather than being driven by reaching a percentage share of the energy market.

To provide ongoing market certainty, Greenpeace prefers that targets are not necessarily set for specific renewable energy technologies. Targets may ultimately become caps on the level of overall installed capacity for these technologies. A flaw in the Spanish FIT was that targets were set, reached and acted as ceilings to industry development. Rather, it may be more appropriate to set goals in terms of maintaining certain payback times and cost parity for various technologies.

Greenpeace is concerned that the explanatory memorandum does not address the important issue of grid access. It should be straightforward that eligible renewable energy sources under the FIT are guaranteed access to the grid if they intend to be able to feed their electricity in to the grid. However, it should not be assumed that this will always be the case and failing to address this in the legislation may uncover problems with some generators gaining access to the grid. Upon the request of an eligible producer, the grid operator should provide the producer priority access to the grid, and have an obligation to reinforcing the grid, where necessary, to ensure accommodation of the electricity generated by the eligible producer.

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