ICRC

independent competition and regulatory commission

Issues Paper

Electricity Feed-in Renewable Energy Premium: Determination of Premium Rate

Report 9 of 2009
November 2009

The Independent Competition and Regulatory Commission (the Commission) was established by the *Independent Competition and Regulatory Commission Act 1997* to determine prices for regulated industries, advise government about industry matters, advise on access to infrastructure and determine access disputes. The Commission also has responsibilities under the Act for determining competitive neutrality complaints and providing advice about other government-regulated activities. Under the *Utilities Act 2000,* the Commission also has responsibility for licensing utility services and ensuring compliance with licence conditions.

The Commission has one part-time Senior Commissioner, Paul Baxter.

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For further information on this investigation or any other matters of concern to the Commission, please contact the Commission on 6205 0799.

Foreword

The Minister for Energy has made a reference to the Independent Competition and Regulatory Commission (the Commission) to provide advice to assist with the determination of the premium rate to be paid for electricity generated under the provisions of the *Electricity Feed-in (Renewable Energy Premium) Act 2008* (Electricity Feed-in Act). The Minister's reference, dated 30 October 2009, has been made under sections 15 and 16 of the *Independent Competition and Regulatory Commission Act 1997* (ICRC Act).

The Electricity Feed-in Act provides for payments from electricity retailers to owners of renewable (solar and wind) electricity generators, including both households and small businesses, for all electricity produced. These payments are made at a price known as the 'premium rate' for generators with a capacity of less than 10kWh, and at 80% of the premium rate for generators between 10kWh and 30kWh capacity.

The Commission has been asked to develop a model for determining the premium rate which provides guidance on the determination of the rate for the period 1 July 2010 to 30 June 2011, and on a mechanism for annual adjustments of the rate for the following four years.

This issues paper identifies matters the Commission considers relevant to the calculation of the premium rate.

The Commission welcomes comments on matters raised in this issues paper as well as comments on any further matters considered by stakeholders to be relevant. These comments will be taken into account in the Commission's draft and final decisions, which will be released in January 2010 and March 2010 respectively.

Paul Baxter
Senior Commissioner
November 2009

Contents

1 Introduction

This chapter:

- discusses the terms of reference for the investigation
- sets out the Commission's proposed timeline for the investigation
- provides information on how interested parties may make a submission on this issues paper.

1.1 Terms of reference

The Commission's full terms of reference are set out in Appendix 1. In summary, the Commission has been provided with a reference under section 15 of the ICRC Act to develop a model for determining the 'premium rate' for the feed-in tariff to apply for the period 1 July 2010 to 30 June 2011, and a mechanism to adjust the rate for the following four years. In doing so the Commission is required to give priority to the following:

- the desirability of costs under the Electricity Feed-in Act impacting equitably on all electricity users
- the need to encourage the generation of electricity from renewable sources
- the need to reduce emissions from greenhouse gases
- the need to reduce the likely effects of climate change
- the desirability of occupiers being able to recoup investment on renewable energy generators within a reasonable time.

The Commission is also required to have regards to:

- the amounts payable under the Electricity Feed-in Act by an electricity distributor or an electricity supplier
- additional metering costs passed on to an occupier because of the installation of the generation equipment.

The amounts payable under the Electricity Feed Act by an electricity distributor or an electricity supplier refers to the arrangement whereby at present 6 c/kWh of the feed-in tariff is funded by retailers. The amounts approximate the savings occupiers are able to make through avoiding purchasing electricity from the national electricity market (NEM).

The Commission has also been asked to identify other matters relevant to the determination of the premium rate. In doing so, the Commission has had regard to its objectives under section 20(2) of the ICRC Act. While these objectives specifically apply to price directions (rather than references under section 15 of the Act), the Commission believes that several are particularly relevant to this review, including:

(f) the principles of ecologically sustainable development mentioned in subsection (5)

(g) the social impacts of the decision

(j) the effect on general price inflation over the medium term.

The Commission also considers that it is relevant to have regard to the nature of the gross feed-in tariff scheme that was announced on 10 November 2009 by the NSW Government. There may be benefits to both customers and industry stakeholders from alignment of the schemes.

1.2 Timeline

The Commission intends to adopt the following timeline for the investigation.

Activity	Date
Issues Paper released for public comment	23 November 2009
Submissions close	23 December 2009
Draft Report released for public comment	29 January 2010
Submissions close	26 February 2010
Final Report transmitted to Minister	15 March 2010
The Minister to provide Final Report to members of the Assembly	17 March 2010
The Minister to determine the rate	31 March 2010

1.3 Making a submission on the issues paper

Submissions may be mailed to the Commission at:

Independent Competition and Regulatory Commission
GPO Box 296
CANBERRA CITY ACT 2601

Alternatively, submissions may be emailed to the Commission at icrc@act.gov.au.

All submissions will be treated as public and will be published on the Commission's website unless the author of the submission indicates clearly that all or part of the submission is confidential and not to be made publicly available. Where confidential material is provided, the Commission prefers that this be under separate cover and clearly marked 'In Confidence'.

The secretariat may be contacted at the above addresses, by telephone on 6205 0799, or by fax on 6207 5887. The Commission's website is at www.icrc.act.gov.au.

1.4 Structure of the issues paper

The remainder of the issues paper is structured as follows.

- Chapter 2 summarises the Electricity Feed-in Act and other initiatives in the ACT to reduce carbon emissions.
- Chapter 3 summarises gross feed-in tariffs in other jurisdictions.
- Chapter 4 identifies some of the key issues associated with the determination of the premium rate.
- Chapter 5 discusses the model which may be used to amend the premium rate in future years.
- Appendix 1 reproduces the Terms of Reference.
- Appendix 2 is a glossary.

2 The Electricity Feed-in Act and other initiatives to reduce carbon emissions

2.1 The Electricity Feed-in Act

2.1.1 Background

A large amount of greenhouse gas pollution is created by the burning of fossil fuels for energy generation. The adverse effects of this pollution can be minimised by increasing the use of renewable forms of energy.

At present renewable energy electricity generation is a relatively expensive alternative to coal fired sources. Feed-in tariffs, which are currently in operation in over 40 countries, provide an incentive to encourage the uptake of renewable energy generation.

In December 2007, the ACT Government issued a Discussion Paper on the possible model and operation of a feed-in tariff arrangement for the ACT. After public consultation the ACT Government decided on a gross scheme. The scheme is given effect through the *Electricity Feed-in (Renewable Energy Premium) Act 2008*.[1] The purpose of the Act is to provide the mechanisms required to encourage the uptake of renewable energy electricity generation. Specifically, it aims to:

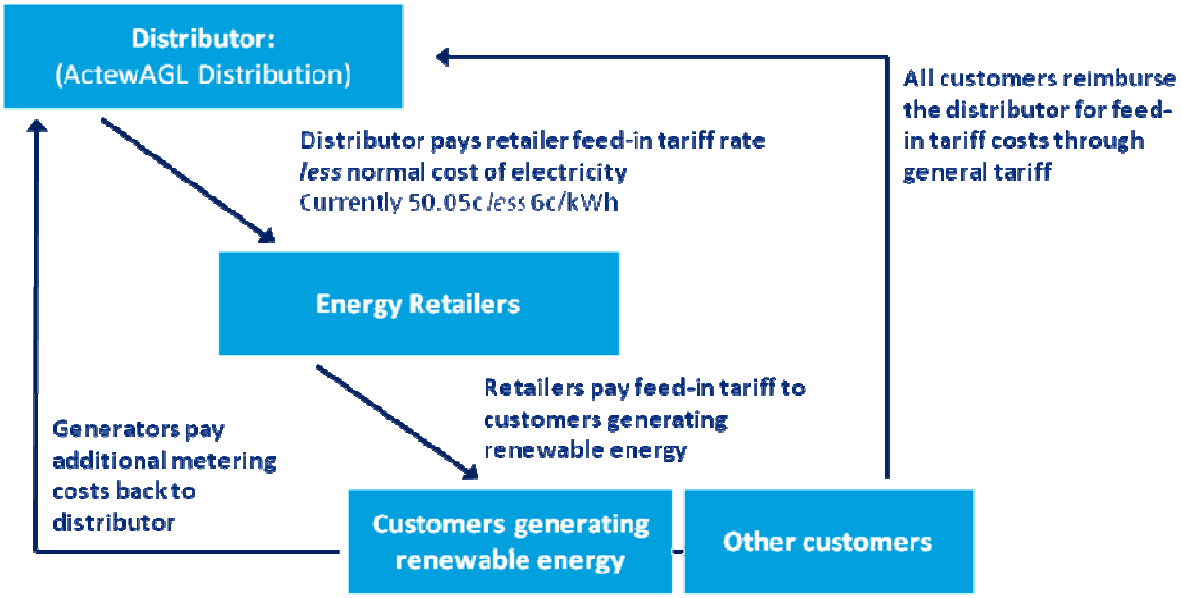
- promote the generation of electricity from renewable energy sources
- reduce the ACT's contribution to human-induced climate change
- diversify the ACT's energy supply
- reduce the ACT's vulnerability to long-term price volatility in relation to fossil fuels.

2.1.2 Details of the Act

The Electricity Feed-in Act provides a framework that enables capital investment into renewable energy electricity generation to be recouped by paying occupiers of premises where generators are installed a 'premium rate' for the gross amount of electricity they generate.

The Act requires electricity distributors (in the ACT, ActewAGL Distribution) to connect generators of renewable energy to the electricity network and to reimburse the electricity suppliers (retailers) of the occupiers the difference between the premium rate determined for renewable electricity and the normal cost of that electricity. The retailer is then required to pay the generator the premium rate.

[1] A full copy of the Act, as amended in 2009, is available at: www.legislation.act.gov.au/a/2008-21/default.asp



The Act prescribes different rates of payment for electricity generated according to the generators capacity:

- Generators of 10kW or less receive 100 percent of the premium rate.
- Generators of between 10kW and 30 kW receive 80 percent of the premium rate.[2]

The Act provided for a transitional premium rate to take effect until a final rate can be determined. The Minister for Energy has declared this to be 50.05c/kWh, which is 3.88 times the transition franchise retail tariff price at the commencement of the Act (1 March 2009). This price makes the ACT transitional feed-in tariff arrangements among the most generous in Australia.

The rate to apply from 1 July 2010 is to be determined by the Minister for Energy, and is to be informed by the advice of the Commission.

The premium rate for the financial year that the generator is connected to the grid is payable (in nominal terms) for electricity generated by the generator for a period of 20 years after the date of connection. Payments are made quarterly in arrears.

2.1.3 Outcomes of the scheme to date

ActewAGL Distribution reports that, as of 30 September 2009, there were 905 renewable generators connected to the ACT distribution network. This includes 191 new connections in the September 2009 quarter, compared with 255 connections for the nine months prior to the commencement of the scheme.[3]

The total metered output for the quarter was 293,345 kWh compared with 221,446 kWh in the June quarter.[4]

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[2] Percentages can be varied by the responsible Minister
[3] Commission website: www.icrc.act.gov.au/energy/electricity/electricity_feed-in_arrangements.
[4] Ibid.

Currently, four retail electricity utilities in the ACT have customers receiving feed-in tariff payments. At the end of September, the four utilities reported 661 occupiers of premises received payments for the September 2009 quarter totalling just under $150,000. (This does not include recent connections, as payments to generators are made quarterly in arrears.)

2.1.4 The Electricity Feed-in Code

An Electricity Feed-in Code supports the Electricity Feed-in Act and was determined by the Commission in February 2009, under the *Utilities Act 2000*. The Code applies to electricity distributors and retailers, and sets out the practices and standards for the operation of the renewable energy feed-in scheme. The Code details the obligations of electricity distributors and retailers to each other and to generators of renewable electricity under the feed-in scheme.

The Code also requires distributors and retailers to report quarterly to the Commission. Distributors are required to report:

- the number of connection applications received by suburb
- the number of new and total connections by suburb
- the total installed capacity and total metered output by suburb.

Retailers are required to report:

- the number of customers receiving a feed-in tariff
- the total premium tariff paid out.[5]

2.2 Other initiatives to reduce emissions in the ACT

Aside from the feed-in tariff arrangements, a number of initiatives and actions are underway to reduce carbon emissions in the ACT and nationally. Key schemes are summarised below.

2.2.1 Weathering the Change – the ACT's Climate Change Strategy 2007-2025

The ACT Climate Change Strategy provides an overview of climate change science, the predicted impacts on the ACT and the Government's approach for responding to climate change. The strategy has a target of reducing the ACT's overall emissions by 60%of 2000 levels by 2050. The milestone goal is to limit greenhouse gas emissions to 2000 levels by 2025.[6]

The first action plan of the strategy (2007-11) contains 43 individual action items falling under four key objectives:

- being smarter with our use of resources
- designing and planning our city to be more sustainable
- adapting to current and future climate change

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[5] ICRC, *Electricity Feed-in Code*, February 2009, see:
www.icrc.act.gov.au/__data/assets/pdf_file/0011/141977/ICRC_Feed-in_Industry_Code_Final_27Feb09_Instrument.pdf
[6] ACT Department of the Environment, Climate Change, Energy and Water, see:
www.environment.act.gov.au/climate_change/weathering_the_change

- improving our understanding of climate change.

The introduction of a feed-in tariff for renewable energy generation was one of the action items under the "designing and planning our city to be more sustainable" objective.

2.2.2 Legislative Assembly Inquiry into ACT Greenhouse Gas Reduction Targets

In late 2008, the ACT Legislative Assembly formed a Standing Committee on Climate Change, Environment and Water to examine matters related to climate change policy and programs, water and energy policy and programs, the provision of water and energy services, conservation, environment and ecological sustainability. On 9 December 2008, the Committee received terms of reference to undertake an inquiry into ACT greenhouse gas reduction targets.

The inquiry released an interim report in September 2009, which contained a number of recommendations for the ACT's approach to climate change, including that a Climate Change (Greenhouse Gas Emissions Reductions Target) Bill be introduced into the Legislative Assembly by June 2010. The Committee recommended that the proposed Bill contain targets, including:

- for the ACT's per capita emissions to peak in 2013
- a 5% reduction in the ACT's overall emissions by 2015
- a 40% reduction in the ACT's overall emissions by 2020
- consider the feasibility of setting an 80% reduction in the ACT's overall emissions by 2050
- for the ACT Government to have zero net emissions from its own operations by 2015.[7]

The ACT Government announced its response to the interim report on 17 November 2009. In it, the Government has supported legislating emissions reduction targets. The ACT Government's response includes support for the introduction of a Bill before June 2010 to legislate emissions reduction targets and mandate the reporting of progress against those targets. The targets include:

- a zero net emissions target for the ACT by 2060
- peaking of the ACT's *per capita* emissions in 2013.[8]

Interim targets are expected to be announced in 2010.

2.2.3 Carbon Pollution Reduction Scheme

The Commonwealth Government has committed to taking action to reduce Australian greenhouse gas emissions in concert with other countries. The primary policy lever chosen is an emissions trading scheme, the Carbon Pollution Reduction Scheme (CPRS).

The CPRS is a comprehensive cap and trade emissions trading system intended to cover around 70% of Australia's emissions. It is designed as a market-based measure aimed at delivering the cheapest possible greenhouse gas abatement.[9]

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[7] Standing Committee on Climate Change, Environment and Water, *Inquiry into ACT Greenhouse Gas Reduction Targets, Interim Report*, updated October 2009 (Report 2): www.parliament.act.gov.au/committees/index1.asp?committee=112&inquiry=753&category=19

[8] ACT Government, *Government Response to the Interim Report of the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets*, November 2009: www.parliament.act.gov.au/committees/index1.asp?committee=112&inquiry=753&category=19

The CPRS legislative package was passed by the House of Representatives on 4 June 2009. On 13 August 2009, the Senate voted against the legislation. The Commonwealth Government has reintroduced the Bills. At the time of writing this issues paper, some uncertainty remains about the political fate of the CPRS. However, it is likely that a national emissions trading scheme will be part of the Australian policy landscape within the next three years.

The introduction of emissions trading at a national level will significantly change, and likely limit, the role of climate change policy at a state and territory level. The Council of Australian Governments (CoAG) has agreed a shared understanding aimed at rationalising government programs in the interests of efficiency and effectiveness from a national perspective. States and territories have agreed to review their range of programs to ensure they are complementary to the CPRS and do not operate to distort the price signals sent by emissions trading.

2.2.4 GreenPower Scheme

The GreenPower Scheme has been designed to increase the total number of customers in the ACT who take up green power and to increase the total amount of green power purchased in the ACT.[10] Compliance with the scheme, which has been mandatory since 1 April 2009, requires all electricity retailers in the ACT to:

- offer all classes of customers access to an accredited green energy product; and
- for that green energy product to be the first offering to new and reconnecting customers.

There are three main types of green power products:

- consumption-based products for which customers nominate the percentage level of green power they wish to purchase based on a nominated percentage of their total electricity consumption
- block-based products which allow customers to purchase a block of green power based on the average household electricity consumption
- consumption-matched products which involve customers continuing to purchase electricity from their standard retailer, but arranging to purchase credits for green power from another provider.[11]

[9] For more information on the CPRS, see www.climatechange.gov.au/government/initiatives/cprs.aspx
[10] For more information on the ACT's GreenPower Scheme, see www.icrc.act.gov.au/energy/electricity/greenpower_scheme
[11] 'Consumption-matched' products are available nationally through websites.

2.2.5 Solar Homes and Communities Plan

The Solar Homes and Communities Plan (SHCP) was a Commonwealth Government program, which encouraged the uptake of photovoltaic technology to generate electricity by providing rebates to homeowners who install photovoltaic power systems. Grants were also available to community organisations that install photovoltaic power systems for educational purposes. The objectives of the program were to:

- reduce greenhouse emissions
- assist in the development of the Australian photovoltaic industry
- increase public awareness of renewable energy.

The program began in 2000 offering $4,000 rebates for the installation of photovoltaic systems. In November 2007, the maximum rebate was increased to $8,000, resulting in a substantial increase in applications and the introduction of a means test of $100,000 per household. Grants were also available for extensions to existing systems.[12]

The scale of the rebate played a substantial role in generating demand for solar installations. Prior to the increase in the maximum rebate, applications for rebates averaged 150 per week. In May 2008, this had increased to 420 per week and by May 2009, 6,050 applications were being received per week. In June 2009, the Commonwealth Government ceased receiving new applications for grants, having committed $700 million to the program (four times its original commitment).

2.2.6 Renewable Energy Target (RET) Scheme/Solar Credits

The SHCP was replaced by the Renewable Energy Target (RET) scheme, which provides a market for renewable energy generation in the form of Renewable Energy Certificates (RECs). Solar credits are a mechanism inside the RET scheme to encourage small-scale renewable energy generation by multiplying the number of RECs received by eligible small-scale solar, wind and hydro electric systems installed after 9 June 2009. Solar credits are applied to the first 1.5kW of capacity of eligible systems.[13]

Owners of a solar micro-generation system can choose to create and sell the RECs themselves, although generally the installer of the system will offer a discount on the installation in exchange for the RECs. The value of this discount varies, depending on the prevailing REC price. For a 1.5kW system at a $30 REC price (November 2009), eligible systems in the ACT would be entitled to around $5,000 worth of RECs.

The level of support under the solar credits scheme is scheduled to be phased back. The solar credits multiplier will be five until June 2013, after which it will decrease each year. There will be no solar credit multiplier from June 2015.[14]

Both the SHCP and RET/Solar Credits schemes objectives are closely aligned with the objectives of a feed-in tariff. Rebates have the effect of lowering the initial cost of installing a photovoltaic

[12]Department of Environment, Water, Heritage and the Arts (Commonwealth): www.environment.gov.au/settlements/renewable/pv/history.html
[13] www.environment.gov.au/settlements/renewable/pv/faqs.html#programs
[14] www.energymatters.com.au/government-rebates/solar-credits-australia.php

system while the premium rate paid for the electricity generated by the system provides a return on this initial investment.

2.2.7 ACT Greenhouse Gas Abatement Scheme

The ACT's Greenhouse Gas Abatement Scheme (GGAS), which is modelled closely on the equivalent NSW scheme, has been in operation since 2005. GGAS imposes mandatory greenhouse gas benchmarks on electricity retailers in the ACT as well as other participants. The scheme sets a greenhouse gas benchmark expressed in tonnes of carbon dioxide equivalent (tCO_2-e) per capita. The benchmark was lowered from the 2005 level of 7.96 tonnes per capita to 7.27 tonnes per capita in 2007, and will remain at this level until 2020.[15]

The scheme is overseen by the Commission, which sets the total annual amount of greenhouse gas emissions allowable for the consumption of electricity in the ACT based on the ACT's population. Retailers and other participants are each allocated a proportion of this amount, referred to as a benchmark, which requires them to reduce their level of greenhouse gas emissions by offsetting any emissions in excess of the benchmark.

GGAS participants submit an audited Greenhouse Gas Benchmark Statement to the Commission in March each year and the Commission confirms whether or not the participant has achieved its benchmark. If a participant has failed to achieve its benchmark, a penalty of $12.00 per tCO_2-e is applied to the shortfall.

2.2.8 Phase 2 of the feed-in tariff

The ACT Department of the Environment, Climate Change, Energy and Water is currently preparing a discussion paper on a potential phase 2 of the feed-in tariff scheme. The Minister for Energy has indicated that phase 2 will examine the extension of the scheme to generators with a greater than 30kW capacity.[16]

It is understood that a discussion paper will be released shortly and followed by a round of public consultation.

[15] Commission website: www.icrc.act.gov.au/actgreenhousegasabatementscheme
[16] Speech by Minister for Energy, Simon Corbell, Informa Conference on Decentralised Energy, Tuesday 9 June 2009, Sydney.

3 Gross feed-in tariffs in other jurisdictions

This chapter provides a brief overview of gross feed-in tariff models in other jurisdictions.

It is useful for the Commission to have regard to other models of gross feed-in tariffs as they demonstrate the effect that the level of tariff has on the take-up of renewable power generation and provide examples of the methods used in other jurisdictions to determine tariffs. The Commission will undertake further research into the operation of gross feed-in tariffs, including the manner in which the tariff is set and the relationship between the tariff and take-up in other jurisdictions in preparing its draft decision.

At the same time, the rate and design of feed-in tariff schemes are specific to local conditions including, among other things, the local price of non-renewable energy, the cost of installing renewable energy systems and the energy output obtainable from those systems. Therefore, while there is some benefit in looking to overseas examples caution must be taken in before trying to replication overseas arrangements in the ACT.

3.1.1 NSW scheme

In November 2009, the NSW Government announce a gross feed-in tariff. Details of the scheme are contained in the *Electricity Supply Amendment (Solar Bonus Scheme) Bill 2009*, which was recently introduced into the NSW Legislative Council. The proposed scheme features:

- a gross feed-in rate of 60c/kWh
- a cap on generating capacity of no more than 10kW
- a seven-year duration, beginning on 1 January 2010 and concluding on 31 December 2016.

The NSW Department of Industry and Investment expects that the average generator will be paid $1,496 per annum under the scheme (based on an average generation capacity of 2,500 kWh). The most that an individual generator could receive in one year under the scheme is $10,000, based on the expected electricity generation of a 10kW system.[17]

3.1.2 Overseas

There are gross feed-in tariff systems operating in several European countries. The systems operating in Germany and Spain are considered among the most generous. The common aim of these systems is to increase the deployment of renewable energy sources by removing price barriers to their adoption. The design of these systems varies substantially according to local energy market conditions and local opportunities for renewable energy generation.

Germany: The German feed-in tariff scheme has been in operation since 1991 and is regarded as one of the most successful in the world. In Germany feed-in tariff rates are differentiated according to the source of the renewable energy. Separate tariffs are determined for biogas, biomass, hydro-

[17]NSW Department of Industry and Investment website: http://www.industry.nsw.gov.au/energy/sustainable/renewable/solar/solar-scheme

electric, geothermal, solar and wind energy sources. The tariff paid for solar generators varies between EUR 45.7c and EUR 57.4c/kWh depending on the capacity of the system and other design features. The tariff is greater for generators that are attached to the roof of a building or structure and greater again generators that are attached to another part of a building. In Germany the feed-in tariff is paid for a period of 20 years.[18]

Spain: In Spain the feed-in tariff system is established under Royal Decree 1578/2008 the rate paid for building integrated installations is EUR 34c per kWh for systems up to 20kW and EUR 31c for systems with a generation capacity of greater than 20kW, but less than 2MW. Systems which are not integrated as part of a building are paid a rate of EUR 32c per kWh up to a 10MW capacity. There are separate feed-in rates for other forms of renewable energy including wind, geothermal, waste combustion, biomass and biogas as well as solar thermoelectric. Spain also has a substantial manufacturer of solar technology, exporting a substantial proportion of its production to Germany.[19]

Slovenia: Slovenia is intending to introduce a feed-in tariff in 2009, although the details of the proposed scheme are currently being reviewed by the EU. Slovenia's proposed scheme is one of the most complex, with tariffs differentiated according to the source of the renewable energy, whether the generator is attached to a building or ground mounted, as well as by generation capacity. Proposed Slovenian tariffs differentiate between four levels of energy generation capacity:

- micro <50kW
- small 50-10,00kW
- medium 1-10MW
- large 10-125MW.

Proposed tariffs for solar generators (micro) vary between EUR 39c/kWh and EUR 47.8c/kWh, with the higher rate proposed for building integrated systems. Contracts are proposed last for 15 years.[20]

Gainesville, Florida (USA): The city of Gainesville in Florida instituted the first solar feed-in tariff in the United States in February 2009.[21] Customers of Gainesville Regional Utilities are eligible for a payment of 32 (US) cents per kWh for each kWh of electricity produced by photovoltaic systems.[22] The Gainesville scheme, much like the scheme in the ACT, fixes the feed-in tariff rate for 20 years. The 32 (US) cent feed-in tariff rate is less than three times the typical household tariff for electricity which is around 12 (US) cents per kWh.[23] The scheme in

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[18] Federal Ministry for the Environment, Nature, Conservation and Nuclear Safety (Germany), Renewable Energy Sources Act (2004), available at: www.bmu.de/files/pdfs/allgemein/application/pdf/eeg_en.pdf

[19] Royal decree number 1578/2008, available at: www.glin.gov/view.action?glinID=216478

[20] www.wind-works.org/FeedLaws/Slovenia/SloveniatoLaunchesSophisticatedSystemof%20Feed-inTariffs.html

[21] The Gainesville Sun, *Commission gives its approval to feed-in tariff for solar power*, 6 February 2009, website: www.gainesville.com/article/20090206/ARTICLES/902061014?Title=Commission-gives-its-approval-to-feed-in-tariff-for-solar-power

[22] Gainesville Regional Utilities is a multi-utility service provider much like ActewAGL serving 90,000 customers in and around Gainesville Florida:: www.gru.com.

[23] Residential customers of Gainesville Regional Utilities face an inclining block tariff for electricity as well as an electric fuel adjustment charge that is a pass-through of the cost of fuel used in the power plants. Details of a typical bill can be found at: www.gru.com/Pdf/calculatingElectric.pdf

Gainesville is limited to 4 MW installed capacity per year which was achieved in the first year with 75% of this capacity reserved for residential rooftop installations.[24]

The Commission seeks input from stakeholders regarding overseas examples of the calculation methodology for gross feed-in tariffs and their applicability to the ACT.

[24] www.treehugger.com/files/2009/03/gainesville-florida-solar-power-feed-in-tariff-program-maxed-ou.php

4 Key issues

This chapter identifies some key issues surrounding the feed-in tariff scheme in the context of the matters that the Commission has been asked to have regard to.

4.1 Recouping the cost of investment

The time frame within which a customer will recoup the cost of investing in renewable energy is often referred to as the 'payback period'. In calculating the payback period, a number of matters need to be considered.

4.1.1 Cost of investing in renewable energy

In the ACT the net cost of investment in renewable energy will include several elements:

- the cost of purchasing and installing the generation equipment, plus
- the cost of installing a new meter, currently set at $162, plus
- ongoing operating and maintenance costs (such as cleaning) associated with the generation equipment, less
- government subsidies or income from other sources – such as the credits associated with the Federal Government's solar credit program.[25]

The table below summarises the potential cost of various sizes of solar generation equipment. It has been sourced from an Australian manufacturer of solar generation technology, with cost and energy output specific to the ACT.[26]

Table 4.1 Indicative cost of solar generation units

Package	Daily Output[27]	Total Cost	Rebate Available (through REC/solar credits)[28]	Net Consumer Cost
1.5kW	6.96kWh	$12,058	$6,240	$5,818
2kW	9.26kWh	$15,348	$6,640	$8,708
3kW	13.94kWh	$21,671	$7,480	$14,191
4kW	18.58kWh	$29,300	$8,320	$20,980
5kW	23.23kWh	$35,481	$9,200	$26,281

The NSW Government's announcement of its feed-in tariff suggested that the average cost per kW of solar systems was around $12,500.

[25] As noted in chapter 3, in some cases customers may choose to retail the credits themselves (and pay a higher initial installation cost); in other cases, customers may surrender them to the installer.
[26] www.aussiesolar.com.au/html/household_solar_power.php
[27] Output varies significantly between systems depending on location, orientation, whether they are kept clean and other factors.
[28] The value of the rebate available will vary according to the prevailing REC price.

As a general rule, the larger the size of the system, the lower the per kWh cost and the higher average output. This is, to some extent, recognised in the design of the scheme which provides for 100% of the premium rate for systems with less than 10kW generation capacity and only 80% of the rate for 10 to 30 kW systems. Nevertheless, the differences in per kWh costs between the two categories mean that the Commission needs to consider whether, in calculating the payback period, it should

- have regard only to the costs and revenues from the less than 10kW systems, or
- also take into account the costs and revenue for the 10kW to 30kW systems.

Even if, for example, the Commission considers only the less than 10kW systems to determine the tariff, it will still need to consider whether the payback period is based around:

- the largest and cheapest system, on a per kWh basis, (i.e. 10kW)
- the most common system (which may only be 1kW)
- the average sized system (which available data suggests is around 2kW, although this includes all units up to 30kW).

The Commission also needs to consider the nature of the generation system. Although it is anticipated that most installations will be solar, wind generators are also able to participate in the scheme. The cost of small scale wind generation can be lower than solar, although opportunities to install small wind turbines are often limited in built-up areas.

Another issue is whether in considering the cost of investing in renewable generation, the Commission should only consider the gross cost to customers, or whether it should also take into account the other rebates and income that might accrue from having a renewable generation unit.

On what basis should the Commission estimate the cost of investing in renewable generation capacity?

Should the Commission have regard to the value of solar credits payments that may offset the initial purchase cost or be retained by the customer?

4.1.2 Within a reasonable time

An important issue in determining the level of the premium rate is the payback period that is adopted. In Germany, a 20-year period was adopted, while NSW has announced that under its proposed scheme, the payback period will be approximately 8 years.

Clearly, the shorter the payback period, the more attractive the feed-in scheme will be and potentially greater the take up of generation equipment and reduction in carbon emissions. The relationship between the premium rate, payback period and take up is therefore critical to the scheme. Trying to predict the rate of take up of such schemes has historically proven difficult for governments however the presence of the interim rate of the 50.05 c/kWh rate and the availability of data on take-up to date provides the Commission with a valuable reference point in this regard.

The Commission notes that under the Electricity Feed-in Act, the premium rate is to be paid for a 20-year period. This could be taken to imply that the payback period should be 20 years. If the Commission were to determine that a lesser payback period, of say 10 years, was appropriate then generators would be earning profits above that required to recoup the investment.

The shorter the payback period adopted the higher the premium tariff will need to be. In simple terms (assuming no discount rate), a 5-year payback period will require a tariff that is double that for a 10-year payback period.

The Commission also notes that in response to the ACT Government's 2007 Discussion Paper, submitters that commented on the payback period suggested a range from 5 to 15 years, with 10 years the most common.[29]

The Commission also notes that the Minister for Energy indicated earlier this year that 'payback times should be competitive with other investment options so that doing right by the environment is also the right financial choice'.[30]

What is an appropriate payback period?

How is the take up of the scheme likely to change based on different premium rates and payback periods?

4.1.3 Use of a discount rate to determine the payback period

In finance theory, and typically as applied in the commercial world, calculation of a payback period takes into account the time value of money. That is, future cash flows are adjusted (downwards) by a discount rate to reflect that alternative investment options are available and that the value of a dollar in the future is less than a dollar today.

Use of a discount rate will mean that for any defined payback period, the premium tariff rate will need to be higher than if no discounting is applied. The premium rate will need to be around 30% higher to achieve a 10-year payback period if a 5% discount rate is used compared to if no discounting occurs. Put another way, a payback period of 10 years with no discounting is equal to a payback period of around 14 years using a 5% discount rate.

Use of a discount rate would add complexity to the calculations and may make it more difficult for domestic electricity consumers in particular to understand the true timeframe in which they could recover their investment. On the other hand, it would provide for a more economically efficient calculation.

If it is established that a discount rate is to be used then there are also issues around the nature of the discount rate and the way in which it should be calculated. Economists note that decisions to make environmental investments are often made taking into account non-financial factors. Further, there is often recognised to be a difference between the 'social discount rate'—that used to decide whether to invest in projects with social and environmental benefits—and that of an individual investor. Indeed, the Commission notes that the Stern Review on the Economics of Climate Change argued for zero discounting in relation to climate change calculations.

Two simple options for the discount rate are:

- the return on 10-year Commonwealth Government securities known as the 'risk-free rate" (currently around 5.3%)

[29] A copy of the discussion paper is available from the ACT Chief Minister's Department website at: www.cmd.act.gov.au/__data/assets/pdf_file/0010/2044/feed-in_tariff.pdf
[30] Speech to the Informa Conference on Decentralised Energy, 9 June 2009

- a weighted average cost of capital which reflects both the cost of debt and equity.

Should a discount rate be used to calculate the payback period? If so, how should it be determined?

4.2 Desirability of costs impacting equitably on all users

Under the gross feed-in tariff scheme the costs associated with the feed-in tariffs are shared between electricity retailers and distributors in the first instance.

- Retailers effectively fund 6c/kWh ('the normal cost of electricity'), but against this they will make savings from not having to purchase electricity from the NEM.
- ActewAGL Distribution funds the remainder of the premium rate (currently 44.05 c/kWh) and must also pay associated costs. These include the costs of processing applications, installing meters, and ongoing administration and operation of the scheme. However, these costs are ultimately passed through to all customers via increased distribution tariffs.

Distribution tariffs are determined by the Australian Energy Regulator (AER) and in April 2009 the AER approved distribution tariffs which include the following costs associated with the feed-in tariff scheme.

Table 4.2 Approved cost of feed-in tariff scheme, $m2008-09

Cost	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Operating expenditure						
Direct scheme payments	3.1	6.8	10.0	12.7	15.3	**47.9**
Network operations	0.1	0.1	0.1	0.1	0.1	**0.6**
Meter inspections	0.1	0.1	0.1	0.1	0.1	**0.5**
Capital expenditure						
On-line application system	0.3	0.0	0.0	0.0	0.0	**0.3**
Replacement/new meters	0.8	0.6	0.5	0.4	0.4	**2.7**

The total cost to ActewAGL Distribution customers averages slightly less than $10 million per annum, taking into account depreciation and a return on the capital expenditure. The Commission understands that total electricity usage in the ACT is forecast to be around 2900 GWh per annum. This means that the average increase in cost will be around 0.34 c/kWh, which is approximately 3% of the average price of electricity and equal to $27 per year for the average ACT consumer.

The costs in table 4.2 are based on estimates submitted by ACTEW. Importantly, under the AER's decision if the actual premium rate payments differ materially from the estimates set out in the table above, then tariffs are adjusted accordingly.

The higher the premium rate the higher the impact on each customer's bill. This will occur due to two factors:

- For a given level of generation, output a higher premium rate will result in a higher total cost.
- Possibly more importantly, a higher premium rate will encourage more generation capacity to be installed.

It is important that in determining the premium rate the Commission take into account the likely impact on customer bills, including for low-income households and tenants. This is discussed in section 4.7.2 below.

4.3 Encouraging generation from renewable sources and reducing greenhouse gas emissions

Both the Commonwealth and ACT Governments have recognised the need to encourage generation from renewable sources and reduce greenhouse gas emissions. As set out in chapter 2, a number of schemes are in place with similar objectives, including the CPRS.

A key justification for feed-in tariffs is the support they provide to new technologies at the diffusion stage of the innovation chain. Increasing the competitiveness of new renewable technologies may lead to further innovation and 'learning-by-doing' effects that reduce the price of small-scale renewable technologies over time so that they become more able to compete with conventional, fossil-fuelled generation. This argument suggests that feed-in tariffs provide a long-term price guarantee that reduces regulatory and market risk for new technologies and increases the levels of diffusion and investment well above those that would otherwise exist to ultimately reduce the overall costs and timeframes for widespread deployment of small-scale, renewable technologies.

Feed-in tariffs are also an important and immediate measure that support individuals taking action to address climate change. The ACT feed-in tariff scheme has already resulted in consumers taking action to reduce emissions, while, for example, the CPRS is yet to be introduced and its potential effectiveness is unknown.

However, a key issue for the Commission is the degree to which the ACT feed-in tariff scheme of itself should encourage renewable generation and reduce emissions. While the ACT feed-in tariff scheme can be seen as being complementary to other arrangements, feed-in tariff schemes can be expensive in terms of the unit cost of CO_2 abated compared to schemes such as the CPRS.

In setting the premium rate, the Commission therefore needs carefully consider how much renewable generation it is reasonable for the scheme to promote, and what level of emission reductions it is reasonable to target. In doing so, the Commission proposes to have regard to the Government's recently announced goals of:

- a zero net emissions target for the ACT by 2060
- for the ACT's per capita emissions to peak in 2013.

The Commission also notes that the Minister for Energy has described the intention of the scheme as 'an aggressive policy that's designed to encourage the uptake of renewable energy'.[31]

What level of greenhouse gas emission reductions should the premium rate be targeted to achieve?

What level of take-up should the premium rate be designed to achieve?

4.4 Amounts payable by electricity distributors and electricity suppliers

As noted above, while ActewAGL Distribution is able to recoup all its additional costs from general distribution tariffs. Electricity suppliers (retailers) effectively fund 6c/kWh of the feed-in tariff (the 'normal cost of electricity').

Retailers are then able to offset the additional cost of electricity against purchases from the NEM.

However, the Commission notes that to the extent that the normal cost of electricity is different from the average NEM price, then this will impact on retailers. For example, if retailers have entered into contracts to purchase at an average NEM price of 4c/kWh, retailers will bear 2c/kWh of costs. This may make them reluctant to compete for customers who participate in the scheme, and resulting in tariff offers for these customers being less attractive.

Conversely, if the average NEM price is greater than 6c/kWh then retailers may be able to make more competitive offers to renewable generators.

The more effective the scheme and the greater the take up the more that retailers will be impacted, particularly in the short term. Thus, while the 'normal cost' of electricity, and its relationship to the NEM price, is set by the Minister for Energy and is not a direct focus for the Commission's advice, it is a matter that the Commission needs to have regard to in setting the premium rate.

4.5 Additional metering costs

Under section 6(2)(c) of the Electricity Feed-in Act, the electricity distributor may pass on to the occupier additional metering costs associated with the installation and operation of generation equipment. ActewAGL Distribution has set a charge of $162 in 2009/10. This cost needs to be taken into consideration when considering the payback period for renewable energy generators.

4.6 NSW feed-in tariff scheme

As discussed in chapter 3, NSW has recently announced the introduction of a gross feed-in tariff scheme that will apply from 1 January 2010. The NSW scheme proposes a gross feed-in tariff of 60c/kWh.

[31] As reported by ABC News on 2 July 2009.

There would be some benefits for aligning, the ACT feed-in tariff payment to the NSW announced rate of 60c/kWh. For example it may reduce customer confusion and assist industry participants to develop common marketing and information material. Many electricity retailers and producers of renewable generation equipment operate in both the ACT and NSW.

A common tariff would also avoid the situation where incentives are created to locate generation units either within or outside the ACT, depending on the respective tariffs and the difference between them. This is desirable because the ACT and NSW generally source energy from the same generation units and the cost of installing small scale solar and wind generation units is unlikely to differ from NSW to the ACT. The benefits to the community from the production of an additional kWh of renewable generation will be almost identical whether the generation occurs in NSW or the ACT.

However, there are a number of reasons why it may not be practical to align the ACT premium rate to the NSW tariff. These include:

- Payments under the NSW scheme are proposed to cease on 31 December 2016, while under the ACT scheme payments will be made for 20 years following the installation of the generation equipment. This means that an identical rate will result in quite different financial impacts on generators.
- The NSW scheme is to be reviewed after 1 July 2012 or if the total generation capacity under the scheme reaches 50MW.
- The ACT scheme provides for 6c/kWh to be contributed toward the cost of the scheme by retailers, whereas under the proposed NSW scheme the total cost is borne, in the first instance, by distributors.

Are there benefits in setting the premium rate in the ACT at the same level as the rate in NSW?

4.7 Factors under section 20(2) of the ICRC Act

As set out in chapter 1 the Commission considers that there are a number of factors identified in section 20(2) of the ICRC which may be relevant to establishing the premium feed-in rate. These are discussed briefly below.

4.7.1 Principles of ecologically sustainable development

Under the ICRC Act ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes through the implementation of the following principles:

(a) the precautionary principle—that if there is a threat of serious or irreversible environmental damage, a lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;

(b) the inter-generational equity principle—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;

(c) conservation of biological diversity and ecological integrity;

(d) improved valuation and pricing of environmental resources.

These principles are all consistent with the objectives of schemes to reduce carbon emissions such as the ACT feed-in tariff arrangement. At the same time, as noted above, carbon emissions are a global concern and any direct environmental improvements as a result of the ACT feed-in tariff scheme will be not be material at a broader level.

4.7.2 Social impacts of the decision

As noted above, ultimately all customers must pay for the cost of the Feed-in premium rate, primarily through distribution tariffs. Based on ActewAGL Distribution's figures the increase in the cost of electricity in the ACT for the average consumer over the first five years of the scheme will be $27, although high electricity users will pay more than low users.

The installation of renewable generation equipment will involve substantial up-front costs. Further, it will be far more difficult for tenants to arrange installation of equipment than owners. Therefore it is likely that higher income households and home owners will install the equipment, with lower income households and tenants participating in the scheme only to the extent that they will pay higher prices for electricity.

The Commission notes that in introducing the scheme to the Legislative Assembly the Minister indicated that "the Government will be closely monitoring the financial impact of the Scheme on those persons and will be considering a range of support mechanisms".

The Commission notes that in its final decision on the 2009-10 retail price for non-contestable electricity customers (the 'transitional franchise tariff' or TFT), it recommended that the energy concession overall cap, as well as the per kilowatt hour rate, be linked to movements in the price of the TFT. To the extent that the feed-in tariff will increase the TFT, then under the Commission's proposal this would automatically increase the concession amounts.

Should the calculation of the feed-in premium rate have regard to the level of concessions that are available?

4.7.3 Effect on general price inflation over the medium term

The introduction of the scheme will add to general price inflation through increases in the price of electricity. The Commission notes that increases in electricity charges were cited by the ABS as a key contributor to the increase in the CPI in the September 2009 quarter.

4.8 What should the premium rate be?

The foregoing discussion sets out a number of issues relevant to the calculation of the feed-in premium rate. As noted above, the current rate is 50.05 c/kWh which is 3.88 times the average retail rate. Rates in other Australian jurisdictions are summarised below:

Table 4.3 Feed-in tariff rates in other Australian jurisdictions

State	Current status	Nature of scheme	Rate	Duration
NSW	Commencing 1 January 2010	Gross	60c per kWh	7 years
VIC	Commenced 1 November 2009	Net	60c per kWh	15 years
QLD	Commenced 1 July 2008	Net	44c per kWh	20 years (subject to review)
WA	Commencing 1 July 2010	Net	To be determined (submissions closed on 20 November 2009)	tbd
SA	Commenced 1 July 2008	Net	44c per kWh	20 years
NT	Commenced 1 July 2009 in Alice Springs only	Net	45.76c per kWh. (capped at $5 per day, then reverts to 23.11c per kWh)	To be determined

The Commission seeks input from customers regarding the level of the premium rate and how it should be adjusted over time

Given the foregoing discussion, what should the premium feed-in tariff rate be set at in 2010-11?

5 A model for adjusting the premium rate

The Commission has been asked to develop a model which provides guidance on the determination of the premium rate from 2011-12 to 2014-15.

5.1 Principles for the model

In establishing such a model, the Commission believes that it should conform to the following principles:

- The model should be based, to the maximum extent, on up to date publicly available information which is rigorous, objective and verifiable.
- The model should be relatively simple, easy to understand and able to be audited.
- The model should be publicly available.
- The operation of model should be consistent with the manner in which the premium rate is initially determined.

5.2 Inputs, content and operation of the model

The Commission anticipates that fundamental characteristics of the model will be determined as part of determining the initial premium rate. For example, if following this investigation, the Minister determines that the 2010-11 premium rate should based on an average payback period for customers of *x* years, then this should be reflected in the model. The model could use this assumption and be automatically updated each year to take account of such things as changes in the cost of purchasing and installing generation equipment. Assuming that information on these costs was relatively easy to obtain and that the Commission could be confident that the market for renewable energy equipment and installation was competitive, this would be a relatively straightforward and mechanistic process.

It would also be possible for the premium rate to be adjusted based on the outcomes of the Feed-in tariff scheme to that time. For example, suppose that after two years of the scheme it became apparent that the *x*-year payback period was not proving attractive to customers and that as a result limited generation capacity had been installed and minimal emission reductions had occurred. In such a case the payback period could be reviewed and reduced, and the premium rate recalculated. Similarly, if the impact of other schemes to encourage carbon emission reductions had 'overtaken' the feed-in tariff scheme, the premium rate could be adjusted accordingly.

Such an approach may provide a greater opportunity for the scheme to achieve its objectives and avoid any unintended or unforeseen consequences. At the same time, it would increase the complexity and cost of annual tariff adjustments, and mean that the process would move from being a relatively mechanistic process to one which involves judgement and the need to forecast likely outcomes.

The Commission is also wary of making such substantial changes to the model that the resulting year-to-year changes in the premium rate were significant. There would be a number of

advantages from ensuring a relatively stable rate, both from an industry stakeholder and customer viewpoint. If the premium rate fluctuates significantly customers may have little confidence in the scheme and could 'speculate' by delaying or bringing forward the installation of equipment based on their view of future movements in the rate. This may then cause demand for renewable generation to fluctuate significantly, potentially creating overcapacity or shortages in this market.

One practical example of this is in relation to the discount rate. If it is established that a discount rate should be used to determine the payback period, then it would be possible to change this rate from year to year to reflect changes in economic conditions. However, in volatile economic times such as those experienced recently, large shifts in the discount rate could have a large impact on the premium tariff. There may be some benefit in leaving the discount rate unchanged over the four-year period to add stability to the tariff.

What principles should underlie the model to establish the feed-in rate for the period 2011-12 to 2014-15?

Should the model take account of the outcomes of the scheme to date?

Appendix 1 Terms of Reference

Australian Capital Territory

Independent Competition and Regulatory Commission (Premium Rate—Electricity Feed-in) Terms of Reference Determination 2009*

Disallowable instrument DI2009–225

made under the

***Independent Competition and Regulatory Commission Act 1997*, Section 15 (Nature of industry references) and Section 16 (Terms of industry references)**

Reference for investigation under Section 15

Pursuant to section 15(1) of the *Independent Competition and Regulatory Commission Act 1997* (the ICRC Act) and having regard to the provisions of section 10(3) and section 11 of the *Electricity Feed-in (Renewable Energy Premium) Act 2008* (the Electricity Feed-in Act), I refer to the Independent Competition and Regulatory Commission (the Commission) the provision of advice to assist with the determination of the premium rate to be paid for electricity that is supplied by compliant renewable energy generators to the distribution network under the provisions of the Electricity Feed-in Act.

Terms of reference for investigation under Section 16

I require that the Commission consider the following matters in relation to the conduct of the investigation:

1. The Commission is to develop a model for determining the premium rate which provides guidance on the determination of the rate for the period 1 July 2010 to 30 June 2011, and on a mechanism for annual adjustments of the rate for the following four years.

2. In developing the model and preparing its advice, the Commission must give priority to the:

    a. desirability of costs under the Electricity Feed-in Act impacting equitably on all electricity users;

    b. need to encourage the generation of electricity from renewable sources;

c. need to reduce emissions from greenhouse gases;

d. need to reduce the likely effects of climate change; and

e. desirability of occupiers being able to recoup the cost of investment in renewable energy generation capacity within a reasonable time.

3. The Commission must also have regard to:

   a. the amounts payable under the Electricity Feed-in Act by an electricity distributor or an electricity supplier; and

   b. any additional metering costs passed on to an occupier because of Section 6(2)(c) of the Electricity Feed-in Act.

4. In conducting its investigation, the Commission should identify other matters relevant to the determination of the rate.

5. The Commission must produce its final report by 15 March 2010.

Simon Corbell MLA

Minister for Energy

30 October 2009

Appendix 2 Glossary and abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AER	Australian Energy Regulator
Commission	Independent Competition and Regulatory Commission (ACT)
CPI	Consumer Price Index
CPRS	Carbon Pollution Reduction Scheme
GGAS	Greenhouse Gas Abatement Scheme
kW, kWh	Kilowatt, kilowatt hours
MW, MWh	Megawatt, megawatt hours
NEM	National Electricity Market
NSW	New South Wales
REC	Renewable Energy Certificate
RET	Renewable Energy Target
SHCP	Solar Homes and Communities Plan
TFT	Transitional Franchise Tariff