



# Review of the Electricity Feed-in (Renewable Energy Premium) Act 2008



**For the ACT Government**

**October 2018**

## About this Report

The ACT Government's Environment, Planning and Development Directorate (EPSDD) has commissioned ITP Renewables' (ITP) to undertake a Review of the *Electricity Feed-in (Renewable Energy Premium) Act 2008*.

## Contacts

ITP: Joe Wyder

EPSDD: James Priestley

## Cover Photos

Residential photovoltaic systems in Canberra. Photos credit: ITP.

Prepared by:

**IT Power Australia**, trading as ITP Renewables

PO Box 6127 O'Connor ACT 2602 Australia	<i>Street Address:</i> L1, 19 Moore Street Turner, Canberra
---	---

Ph: 61-2 6257 3511

Fx: 61-2 6257 3611

[info@itpau.com.au](mailto:info@itpau.com.au)

[www.itpau.com.au](http://www.itpau.com.au)

## Report Control Record

### Document Control

<b>Report Title</b>	Review of the <i>Electricity Feed-in (Renewable Energy Premium) Act 2008</i>		
<b>Client</b>	ACT Govt - EPSDD	<b>Client Contact</b>	James Priestley
<b>ITP ref</b>	A0299	<b>Client ref</b>	EMRFIT2018-001
<b>Distribution</b>	<b>Commercial in-Confidence</b>		
<b>Filepath</b>	A0299 ACT Govt Review of Feed-in Tariff		

Version	Date	Status	Authors	Project Manager	Approved
1.0	31 Aug 2018	Draft	J Wyder, J Hazelton, A Ngo, C Mazzone, O Talent	Dr R Passey	O Woldring
2.0	15 Oct 2018	Final	J Wyder, J Hazelton, A Ngo, C Mazzone, O Talent	Dr R Passey	S Franklin

## Table of Contents

<b>Executive Summary</b> .....	<b>5</b>
<b>1. Background</b> .....	<b>9</b>
1.1 Premium Feed-in Tariff Rates .....	10
1.2 ACT Climate and Energy Policies .....	10
1.3 National Renewable Energy Policies .....	11
1.4 Review of the Electricity Feed-in (REP) Act 2008, August 2015 .....	12
1.5 Changes Since the 2015 Review .....	13
1.6 Key Annual Parameters .....	15
1.7 Normal Cost of Electricity .....	16
<b>2. PFIT Scheme</b> .....	<b>19</b>
2.1 Participation and Uptake .....	19
2.2 National Trends .....	22
2.3 Renewable Generation .....	23
<b>3. Administration and Reporting</b> .....	<b>28</b>
3.1 The Act .....	28
3.2 Responsibilities .....	29
3.3 PFIT Scheme Implementation .....	30
3.4 Scheme Administration Costs .....	34
3.5 Reporting Requirements .....	34
3.6 Annual Reports .....	36
<b>4. Safety</b> .....	<b>39</b>
4.1 Access Canberra Inspections .....	39
4.2 CER inspections .....	40
4.3 Anti-islanding .....	42
<b>5. Economic Outcomes</b> .....	<b>44</b>
5.1 Costs and Benefits for the ACT .....	44
5.2 Greenhouse Gas Abatement .....	46
5.3 Other Impacts .....	47
<b>6. Customer Impact</b> .....	<b>50</b>
6.1 Cost to ACT Households .....	50
<b>7. Conclusion and Recommendations</b> .....	<b>51</b>
7.1 Achievement of Act's Objectives .....	51
7.2 Scheme Improvements .....	52
<b>8. References</b> .....	<b>54</b>
<b>Annex A: Stakeholders</b> .....	<b>56</b>
<b>Annex B: Legislation History</b> .....	<b>57</b>
<b>Annex C: ActewAGL Retail Frequently Asked Questions</b> .....	<b>66</b>

## Abbreviations

AC	Alternating Current
ACT	Australian Capital Territory
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
CAPEX	Capital Expenditure
CER	Clean Energy Regulator
CO <sub>2e</sub>	Carbon-dioxide equivalent (measurement of greenhouse gas emissions)
DC	Direct Current
DNSP	Distribution Network Service Provider
EPD	Environment and Planning Directorate
EPSDD	Environment, Planning and Sustainable Development Directorate
FIT	Feed-in Tariff
kVA	kilovolt-ampere, unit of power, typically AC
kW	kilowatt, unit of power, kW <sub>p</sub> or kW <sub>DC</sub> is Direct Current, kW <sub>AC</sub> Alternating Current, where there is no subscript, the reference hasn't specified
kW <sub>p</sub>	kilowatt peak, photovoltaic DC power output under standard test conditions
kWh	kilowatt hour, unit of energy
ICRC	Independent Competition and Regulatory Commission (ACT)
ITP	IT Power Australia Pty Ltd, trading as ITP Renewables
LCOE	Levelised Cost of Electricity
LGC	Large Generation Certificate
LRET	Large-scale Renewable Energy Target
MW	Megawatt
MWh	Megawatt hour
NERL	National Energy Retail Law (ACT)
NMI	National Metering Identifier
OPEX	Operations and Maintenance Expenditure
PFiT	Premium Feed-in Tariff
PV	Photovoltaic
RE	Renewable Energy
REC	Renewable Energy Certificate
REP	Renewable Energy Premium
RET	Renewable Energy Target
SGBS	Small Generator Buyback Scheme
SRES	Small-scale Renewable Energy Scheme
STC	Small-scale Technology Certificate
W	Watt, unit of power

## Executive Summary

This report has been commissioned by the Environment, Planning and Sustainable Development Directorate (EPSDD) in the ACT Government under Section 13 of the *Electricity Feed-in (Renewable Energy Premium) Act 2008* (the Act). This report provides a review of the operation of the Act as required by legislation. The previous review was in 2015 and this is the second review to be undertaken.

The Act provides for a scheme for payment of a premium Feed-in Tariff (FiT) to eligible ACT households and businesses generating renewable electricity. While applications were open to any type of renewable energy generator with a capacity below 200 kilowatts (kW), applications only for solar photovoltaic (PV) installations were received. As such, the scheme is often referred to as the ACT solar, small and medium scale premium FiT scheme (PFiT Scheme).

The PFiT Scheme opened for applications on 1 March 2009 and was closed to new applicants on 13 July 2011. Successful applicants are eligible to receive premium feed-in tariff payments for 20 years from the date of connection of their PV system to the electricity network. In 2015, amendments to the Act were passed so that the latest date at which a PV system may be connected under the PFiT Scheme was 31 December 2016. This means that the PFiT Scheme is scheduled to end on 31 December 2036.

PFiT payments are made by ACT electricity retailers for the total, gross kilowatt hours (kWh) the systems generate. The PFiT rate varies depending on system size and date of application. Retailers are reimbursed by the electricity distributor the difference between the PFiT and the Normal Cost of Electricity (NCE) as prescribed under the Act. The electricity distributor in turn recovers these costs from all electricity consumers through their electricity bills.

The Act was introduced at a time of early policy development in renewable energy in the ACT when the contribution of renewables to electricity supply was low. The objectives of the Act governing the PFiT Scheme reflect that policy context. The objectives of the Act are to:

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

Since the implementation of the Act, there have been significant changes to energy policy frameworks, including the ACT Government setting a target of 100% renewable electricity supply by 2020. This has been implemented through reverse auctions for a large-scale FiT, among the most progressive policies in the world.

The PFiT Scheme is a legacy, regulated FiT scheme. The ACT Government no longer

regulates FiTs for new rooftop PV systems. However, ACT households can still access payments for excess generation<sup>1</sup> from PV systems through unregulated, retailer market offers (retailer FiT).

Accurate reporting on the PFiT Scheme is reliant on quality data from the electricity distributor and retailers to the EPSDD. ITP Renewables (ITP) undertook this review based on information provided by Evoenergy as the electricity distributor and the EPSDD. The review highlighted data anomalies and data quality control issues. Evoenergy are currently undertaking a data validation exercise to be completed in late 2018 which is expected to address some of these issues.

ITP's analysis of the data provided indicates that, as of 30 June 2018, there were 10,438 generators supported by the PFiT Scheme with a total capacity of 33.43 megawatts (MW<sub>DC</sub>)<sup>2</sup> and being credited for around 47,560 megawatt hours (MWh) of electricity in 2017-18. The PFiT Scheme contributed \$31.72 to the annual electricity bill for an average ACT household<sup>3</sup> in 2017-18, or around \$0.61 per week. Since the August 2015 Review, new capacity additions have mainly been in medium-scale systems (30 to 200 kW<sub>DC</sub>).

ITP's review has resulted in eight recommendations to improve the operation of the Act. The first four recommendations are to assist with the PFiT Scheme administration and implementation. The fifth recommendation addresses a wider electrical safety issue for PV systems in the ACT. The remaining three recommendations relate to reporting practices to improve the accuracy of public reporting on PFiT Scheme performance and outcomes.

ITP recommends that the ACT Government:

1. Require Evoenergy, as the PFiT Scheme administrator, to publish an easy-to-understand Guide to the Act to assist stakeholders understand the intent, definitions and key dates from the Act in a consistent manner. This guide should differentiate information according to the date of entering into contract for installation of the generator. It should replace the existing information made available by ActewAGL Retail and clarify the circumstances in which feed-in payments can be affected (e.g. capacity additions, component replacements, addition of battery storage devices, selling a home, demolishing a home, relocation of generators and procedures to voluntarily leave the PFiT Scheme).
2. In requesting that Evoenergy publish a Guide to the Act, advise them that information regarding PV system alterations should be prioritised. This is to ensure

---

<sup>1</sup> Gross FiTs for households ceased to be available in the ACT on 1 July 2013. Typically, new rooftop PV systems in the ACT are net metered and only receive the retailer FiT for excess generation exported to the grid.

<sup>2</sup> The definition of capacity in the Act for PV systems is the DC capacity of the PV array. Other reports may report PV capacity in terms of the total AC rating of the PV inverters.

<sup>3</sup> Representative ACT household consuming 7,151 kWh per year.

customers are aware of the financial implications of adding capacity to existing systems beyond the approved capacity of the connection.

3. Consider a review of the methodology for determining the NCE. In the interests of transparency, it is suggested that the methodology be published, and for consistency with other processes, that any changes to the NCE rate be on a financial year basis.
4. Consider developing a methodology for reimbursing Evoenergy's PFIT Scheme administration costs. The approach to this could be based on recent amendments to the ACT large-scale FiT to allow for administration cost recovery. The aligning of approaches could lead to potential process efficiency savings.
5. Consider commissioning analysis of the anti-islanding test data that Evoenergy collects to investigate if amendments to the *Utilities Act 2000* are required to enable Evoenergy to disconnect PV systems that are non-compliant with requests to conduct anti-islanding tests.
6. Enforce Section 4 of Disallowable Instrument (DI2015-263) to require retailers to provide the Minister with an annual report on the PFIT Scheme. EPSDD should then undertake detailed cross-checking of the key financial year parameters between the retailers' annual reports and the distributor's annual report to ensure consistency or establish reasons for differences.
7. Amend Section 5(a) of the distributor's reporting requirement in DI2015-263 to include the additional items:
  - vi) inverter rated output capacity ( $kW_{AC}$ ) and installed PV array capacity at Standard Test Conditions ( $kW_{DC}$ ) at the date of connection,
  - vii) the Annual Generation Credited (kWh), defined as the sum of the meter reads that occur during the period 1 July to 30 June,
  - viii) the number of actual meter reads for the Annual Generation Credited figure, and
  - ix) the number of estimated meter reads for the Annual Generation Credited figure.

A detailed definition and methodology for providing an indicative estimate of the actual 'electricity output during each quarter of the financial year' (or just the estimated total output for the financial year) should also be considered, e.g. a linearly prorated figure based on the proportion of days in the billing period falling in the relevant quarter/financial year.

8. Ensure all future Annual Feed-in Tariff Reports:
  - document clearly whether PV capacity figures reported are  $kW_{DC}$  or  $kW_{AC}$ ,

- report installed PV capacity in both kW<sub>DC</sub> and kW<sub>AC</sub> and annual generation credited in kWh, (as opposed to MW and MWh) in the 'Small and Medium-scale FiT Scheme performance' section, and
- define key terms such as 'Total premium FiT paid to eligible entities' and 'Total amount reimbursed to retailers for PFIT obligations' and use these terms as opposed to 'Total FiT Paid'.

The authors would like to thank the staff of EPSDD, other Government agencies and Evoenergy for their contributions to this Review.



## 1. Background

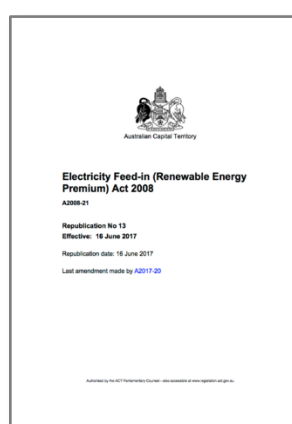
This review into the operation of the *Electricity Feed-in (Renewable Energy Premium) Act 2008* (the Act) was commissioned by the ACT Government's Environment, Planning and Sustainable Development Directorate (EPSDD). The review is to assess whether the Act is still appropriate to guide the implementation of the small and medium-scale, Premium Feed-in Tariff (PFiT) scheme (PFiT Scheme) or if amendments are required. Section 13 of the Act requires the operation of PFiT Scheme to be reviewed every five years after its commencement. This is the second review to be completed, with the first review in 2015.

The PFiT Scheme opened on 1 March 2009 and closed to new entrants on 13 July 2011. Successful applications made in this period are eligible to receive premium FiT payments for a period of 20 years from the renewable energy generator's date of connection to the electricity network. In 2015, amendments to the Act were passed so that the latest date at which a system may be connected under the PFiT Scheme was defined as 31 December 2016.

The PFiT Scheme offered a gross FiT where systems are metered in a manner that allowed for the PFiT to be paid by retailers to system owners on every kWh generated. The retailers recover the difference in cost between the PFiT and the Normal Cost of Electricity (NCE) from the distributor. The distributor recovers this cost from all users on the distribution network. Thus, all grid-connected, electricity consumers in the ACT pay for the PFiT Scheme through their electricity bills.

The original Bill (11 pages, 14 Sections) was amended to 12 pages and 13 Sections before being passed by the Legislative Assembly on 2 July 2008. Eligibility included solar, wind and any other renewable energy source defined by the Minister. During the life of the PFiT Scheme, only applications from solar photovoltaic (PV) systems were received.

This review focuses on the current version, Republication No. 13, (32 pages, 13 Sections) effective 16 June 2017. This legislation is available from the website: [www.legislation.act.gov.au](http://www.legislation.act.gov.au)



## 1.1 Premium Feed-in Tariff Rates

The history of PFIT rates on offer and eligible size threshold changes under the PFIT Scheme is summarised below. The PFIT was an ACT Government legislated requirement for retailers operating in the ACT at the time.

System size	Cents per kWh	Start date	End date	Days (total)
Small (up to 10kW)	50.05	1-Mar-09	30-Jun-10	487
Medium (10-30 kW)	40.04	1-Mar-09	30-Jun-10	487
Small revised (up to 30kW)	45.7	1-Jul-10	31-May-11	335
Micro (0-30 kW)	45.7	7-Mar-11	11-Jul-11	127
Medium (30-200 kW)	34.27	7-Mar-11	11-Jul-11	127
Over 200 kW	30.16	12-Jul-11	13-Jul-11	2

Table 1: History of Renewable Generation (<200 kW<sub>DC</sub>) PFITs in the ACT.

### Table Notes:

1. The original Act had its generation capacity (power) thresholds specified incorrectly as kWh (energy). This has been interpreted as kW<sub>DC</sub> (PV modules' power at Standard Test Conditions) for the above table.
2. While the notified Act had a 37.54c/kWh tariff for 30 to 200 kW<sub>DC</sub> generators from 1 March 2009, access to this was removed by amendments on 2 March 2009.

While the PFIT Scheme is often referred to as the '*Small and Medium-scale FiT scheme*', care is required when describing systems as small or medium as the use of these terms changed during the life of the PFIT Scheme. The second republication of the Act (7 March 2011) defined the terms as:

- micro = not more than 30 kW, and
- medium = more than 30 kW but not more than 200 kW.<sup>4</sup>

## 1.2 ACT Climate and Energy Policies

The following summarises ACT policies to provide context to the operation of the PFIT.

### Climate Change Strategy Action Plan 2 (AP2)

The ACT Government released a set of actions in 2012 to help achieve the ACT 2020 greenhouse gas reduction targets legislated under the *Climate Change and*

---

<sup>4</sup> This review uses the micro and medium terms where feasible. The issue of whether generation capacity was kW<sub>DC</sub> or kW<sub>AC</sub> was also addressed in the second republication which defined capacity as the rated power output of the PV panels, which has been interpreted to mean the PV array's total kW<sub>DC</sub> at Standard Test Conditions.

*Greenhouse Gas Reduction Act 2010*. This included an emission reduction target for the ACT of 40% below 1990 levels by 2020 and net zero emissions by 2060. The AP2 identified a changing mix of electricity through large-scale renewable energy generation capacity would make the largest contribution to meeting the 2020 target for emissions reduction.

## **ACT Sustainable Energy Policy**

The ACT Government released a progressive energy policy in 2011 to provide for environmental and climate protection while ensuring secure and affordable energy, smarter use of energy, cleaner energy and growth in the clean economy. The policy refers to the need to be strongly integrated with, and complementary to, federal policies and international developments.

### **100% by 2020 Renewable Electricity Target**

In April 2016, the ACT Government set a revised target of 100% renewable electricity supply by 2020. A reverse auction, feed-in tariff scheme for large renewable energy generators was designed and implemented to achieve this target.

## **1.3 National Renewable Energy Policies**

The Federal Government has also had policies supporting renewable generation that may have had impacts on the uptake of solar PV systems during the term of the PFIT Scheme. The relevant Federal policies and programs are outlined below.

### **Solar Homes and Communities Plan**

The Solar Homes and Communities Plan offered rebates of \$8/W<sub>DC</sub> up to a maximum of \$8,000 (for 1 kW and above PV systems) until it was closed to new applications on 9 June 2009 and replaced by Solar Credits. The Solar Homes and Communities Plan was administered by the Department of Environment, Water, Heritage and the Arts.

### **Mandatory Renewable Energy Target**

Installed PV systems less than 100 kW<sub>DC</sub> could also deem 15-years' worth of Renewable Energy Certificates (RECs) under the Mandatory Renewable Energy Target during the period 1 April 2001 to 9 June 2009<sup>5</sup>. The right to the RECs could be signed over to the PV system supplier in exchange for an upfront discount on the installed cost of the PV system.

### **Solar Credits**

From 10 June 2009, 'Solar Credits' became available. These were multipliers for the 15-year deemed amount of RECs that PV systems, less than 100 kW<sub>DC</sub>, could create. The

---

<sup>5</sup> The Mandatory Renewable Energy Target started as an additional 9,500 GWh by 2020. It was implemented through a Renewable Energy Certificate (REC) mechanism, where 1 REC was created for each MWh of renewable generation. In August 2009, the Target was renamed the Renewable Energy Target (RET) and expanded to 45,000 GWh by 2020. In January 2011, it became the LRET with a target of 41,000 GWh by 2020. In June 2015, the LRET was reduced to 33,000 GWh by 2020.

multiplier applied to the first 1.5 kW<sub>DC</sub> of capacity. Initially, the multiplier was to be five to 30 June 2011 and then reduce by one each financial year until it was one in 2014-15. However, this was revised on 5 May 2011, so that the multiplier was three in 2011-12, two for July to December 2012 and one by 1 January 2013.

### **Small-scale Renewable Energy Scheme**

In January 2011, the Renewable Energy Target was split into the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES).<sup>6</sup> This redefined RECs into either Large-scale Generation Certificates (LGCs) or Small-scale Technology Certificates (STCs) and created separate markets. While SRES was uncapped for the amount of STCs, it implemented a mechanism that capped their maximum price to \$40, while LGCs could trade at higher values. The Solar Credits multipliers continued as outlined above and applied to the deemed STCs.

### **Implications**

These policies would have reduced the cost to customers of installing PV systems in the ACT during the period that the PFIT Scheme was accepting new connections. These discounts also complicate the calculations for the cost of systems and abatement, highlighting the need to document assumptions and methodologies clearly.

#### **1.4 Review of the Electricity Feed-in (REP) Act 2008, August 2015**

The ACT Government's Environment and Planning Directorate conducted this review based on information provided by ActewAGL Distribution and participating retailers. This review did not provide recommendations but outlined nine key findings. A summary of these key findings follows.

- A. The PFIT Scheme has contributed to each of the four objectives of the Act. As at June 2015, there were 10,175 connections under the Scheme with 26.0 MW capacity<sup>7</sup>.
- B. Over the period of the PFIT Scheme, installed PV system costs in the ACT decreased from about \$9.62/W to \$2.42/W<sup>8</sup>.

---

<sup>6</sup> The Clean Energy Regulator administers the LRET and SRES and further information is available from: [www.cleanenergyregulator.gov.au](http://www.cleanenergyregulator.gov.au)

<sup>7</sup> Number of connections from page 11 of the Review and the actual capacity was 25,975.832 kW for the end of 2014-15 in the data used for Figure 3 in the Review. The 2015-16 Annual Report (Dec 2016) has the different figures of 10,270 connections and 26.2 MW for these key parameters with no explanation provided for the difference. The 2014-15 Annual Report (Dec 2015) has 9,950 connections with 26.2 MW of capacity for these key parameters and states that, 'according to the distributor, data provided previously' (for the FIT Review) 'contained errors which have now been revised.'

<sup>8</sup> It is not clear from the Review if these installed PV costs are before or after the STC discount available through the Federal Government's Small-scale Renewable Energy Scheme. Page 10 implies it is the 'out-of-pocket' cost, so it may be after the STC discount.

- C. In 2013-14, the PFiT Scheme contributed approximately 2.3% to retail electricity charges<sup>9</sup>. The cost to a household with a median consumption of 7.18 MWh per year is estimated at \$36.09 per year.
- D. The extent of price reduction for installed PV systems over the period of the PFiT Scheme was not anticipated. Similar rates of PV installation may have occurred with lower FiT rates and contract periods less than 20 years.
- E. The costs of abatement to the ACT (excluding the SRES costs) was estimated to be around \$138 per tonne<sup>10</sup>.
- F. The PFiT Scheme has not had any adverse impacts on the reliability of the ACT electricity network. While it is estimated to have contributed a 3.6% reduction in summer peak demand, it is the winter peaks that drives any network investments in the ACT.
- G. The ACT Government's mandatory inspection program contributed to significant improvements in the quality and safety of PV systems installed over the life of the scheme.
- H. There have been issues with timeliness and consistency of data, administered by the Distributor and the Retailers.
- I. There is a lack of clarity with the regard to the role of the Distributor, as the Scheme administrator, as well as a lack of formal administrative systems maintained by the Distributor and the Environment and Planning Directorate.

A variety of methodologies exist to determine the cost of abatement. The Department of Climate Change and Energy Efficiency<sup>11</sup> sets out two methodologies, the fiscal cost of abatement and the resource cost of abatement. The fiscal cost is the direct costs and revenue forgone, net of any savings, incurred by Government divided by the total abatement over the same time period. The resource cost is expenditures and savings incurred by government, households, businesses and non-government organisations divided by the total abatement over the same time period. It is not clear which method is used in the 2015 Review, but the result will vary depending on the methodology used.

## 1.5 Changes Since the 2015 Review

Following the Review, DI2015-263 Electricity Feed-in (Renewable Energy Premium) Reporting Determination 2015 (No 1) was implemented. This instrument determined the

---

<sup>9</sup> The tariff for this estimate is not documented. However, using the figures provided, it can be calculated that the tariff utilised for 2013-14 was about 21.85c/kWh with the PFiT cost being about 0.50c/kWh of this. The actual tariff in 2013-14 was 20.13c/kWh (GST inc).

<sup>10</sup> The estimate appears to be for the period 1 March 2009 to 30 June 2037 (>28 years) and use a real annual discount rate of 5% with the NCE cost increasing 1.5% pa from the 6.06c/kWh in 2014-15.

<sup>11</sup> Department of Climate Change and Energy Efficiency, October 2011 '*Estimating the cost of abatement*'.

timing and nature of reporting by retailers and the electricity distributor and became operational in September 2015.

This required the Electricity Distributor to provide financial year reporting on relevant generators'

- i. electricity output during each quarter of the financial year
- ii. applicable premium rate
- iii. installed capacity at the date of connection
- iv. suburb in which the relevant generator is located
- v. whether the relevant generator was still connected to the electricity distributor's network at the end of the previous financial year'.

It also requires NERL Retailers to provide financial year reporting on relevant generators'

- i. payments made during each quarter of the financial year for the total electricity generated
- ii. applicable premium rate
- iii. suburb in which the relevant generator is located
- iv. whether the NERL Retailer was still associated with the relevant generator at the end of the financial year'.

## 1.6 Key Annual Parameters

ITP's interpretation of the key parameters of the PFiT Scheme are outlined in the table below.

Year	Number of generators	Capacity kW	Reported Generation kWh	Total PFiT reimbursed	Calculated cumulative \$m
2008-09	339	1,112.5	202,375	\$83,256	\$0.083
2009-10	1,454	4,004.3	2,409,289	\$1,189,146	\$1.272
2010-11	4,101	11,892.1	7,670,699	\$3,633,372	\$4.906
2011-12	8,494	22,990.3	20,947,451	\$10,056,442	\$14.962
2012-13	9,663	25,218.6	33,717,938	\$14,159,199	\$29.121
2013-14	10,025	25,796.0	35,342,888	\$13,885,707	\$43.007
2014-15	10,270	26,200.0	33,397,000	\$13,704,878	\$56.712
2015-16	10,304	26,350.0	34,910,000	\$14,562,165	\$71.274
2016-17	10,394	32,530.0	40,355,092	\$15,496,627	\$86.771
2017-18	10,428	33,428.6	47,559,950	\$16,502,848	\$103.274

Table 2: Summary of the PFiT Scheme's Key Annual Parameters

### Table Notes

- Key parameters to 30 June 2017 from published reports. Where multiple figures have been published, the most recent published figure has been used. Capacity is assumed to be kW<sub>DC</sub>.
- 2017-18 key parameters based on ITP interpretation of data provided by Evoenergy on 16 August 2018 with Total PFiT reimbursed to retailers calculated by ITP.
- The 'reported generation' figures are the sum of the meter reads that occur during the period 1 July to 30 June. This is different to PV generation in the period 1 July to 30 June due to the '90-day' meter read period.
- The column, Total PFiT reimbursed is the amount reimbursed by the distributor to the retailers. It is assumed that this is what is reported as 'Total FiT paid' in the previous PFiT annual reports. The term Total PFiT reimbursed is used to distinguish between:
  - the 'Total PFiT amount credited to eligible entities', and
  - the 'Total PFiT reimbursed' to the retailers, which factors in the Normal Cost of Electricity at the time.

## 1.7 Normal Cost of Electricity

Section 6A of the Act specifies that the Minister may determine the Normal Cost of Electricity (NCE) but does not define this term or prescribe the methodology. The history of the NCE is shown in the following table.

Date	Title	NCE	Start	End
27-Feb-09	2009 Determination 1	6.0	1-Mar-09	30-Jun-10
31-Mar-10	2010 Determination 1	6.0	1-Jul-10	30-Jun-12
30-Aug-12	2012 Determination 1	6.0	1-Jul-12	30-Jun-13
16-May-13	2013 Determination 1	7.5	1-Jul-13	30-Jun-15
28-Aug-14	2014 Determination 1	6.06	1-Sep-14	30-Jun-16
26-May-16	Determination 2016	5.2	1-Jul-16	31-Dec-18
21-Dec-17	Determination 2017	9.4	1-Jan-18	30-Jun-19

Table 3: Normal Cost of Electricity for the PFIT Scheme

Based on an attachment to an EPSDD email dated 22 December 2017, the methodology is:

‘...based on the approach used by the NSW Independent Pricing and Regulatory Tribunal (IPART)<sup>12</sup> for estimating the financial benefit that retailers receive when solar electricity is exported to the grid<sup>13</sup>. The input factors are drawn from the annual ACT Independent Competition and Regulatory Commission (ICRC) final decision on electricity cost components<sup>14</sup>. The key difference between the two data sources is that the IPART “Forecast average wholesale price” is based on a 40-day forecast, while the equivalent ICRC factor “Wholesale energy purchase cost” is a historical two-year average. This factor provides an empirical basis for the NCE setting which will adjust, steadily, as energy purchase costs change over time.

### **Normal Cost of Electricity =**

*( ICRC wholesale energy purchase cost x IPART solar premium ) + ICRC energy losses + ICRC NEM fees*

Where:

- ICRC input data for 2017 are from p. xii of [Standing offer prices for the supply of electricity to small customers from 1 July 2017](#).
- IPART solar premium is from p. 17 of [Solar feed-in tariffs: Benchmark range 2017-18](#).

An example of this calculation in practice is shown below with the following inputs:

---

<sup>12</sup> [www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/pricing-reviews-energy-services-publications-review-of-solar-feed-in-tariffs-201718/solar-feed-in-tariffs-201718-final-report-june-2017.pdf](http://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/pricing-reviews-energy-services-publications-review-of-solar-feed-in-tariffs-201718/solar-feed-in-tariffs-201718-final-report-june-2017.pdf), p. 23

<sup>13</sup> The methodology is written slightly differently than in the IPART report due to slight differences in input factors.

<sup>14</sup> [www.icrc.act.gov.au/wp-content/uploads/2017/03/Report-6-of-2017-June-2017-1.pdf](http://www.icrc.act.gov.au/wp-content/uploads/2017/03/Report-6-of-2017-June-2017-1.pdf), p. xii.



- ICRC wholesale energy purchase cost = 7.503 c/kWh
- IPART Solar premium = 1.14
- ICRC energy losses = 0.754 c/kWh
- ICRC NEM fees = 0.089 c/kWh

Thus: **NCE** =  $(7.503 \times 1.14) + 0.754 + 0.089 = 9.39642$  c/kWh

Consistent with this methodology, notifiable instrument NI2017-687 sets the NCE rate of 9.4c/kWh for the period 1 January 2018 to 30 June 2019.

IPART's Final Report Solar feed-in tariffs<sup>15</sup>, June 2018 reduces the solar multiplier to 0.99 for 2018-19. This is mainly due to the reducing frequency of high daytime NSW electricity spot price events, which is partially caused by demand (from the grid) during daylight hours progressively reducing between 2009-10 and 2016-17. The electricity demand (from the grid) in NSW has fallen in daylight hours due to the increased amount of behind-the-meter PV installed on households and businesses.

The NCE methodology is largely influenced by the wholesale energy purchase cost calculations that the ICRC uses. This is a function of forward prices and load shape / ratio data from NSW and ACT. The advantages of using this methodology include it references an empirical cost component approach used by the independent regulator to set maximum prices for regulated retail electricity contracts in the ACT. It appears to be a reasonable approach given historical approaches to sourcing electricity. The disadvantage is that the approach does not take into account the ACT's specific circumstances.

The NCE methodology does not directly take into account the contracts for difference approach to the large-scale feed-in tariff and its price impacts for ACT electricity consumers. Under the contracts for difference, eligible renewable generators receive the difference between the generator's FiT price and the wholesale price in MWh in the relevant wholesale market pool that the generator is located in (NSW, Victoria or SA). The contract for difference payment is calculated for each 30 minute interval, aggregated and paid monthly in arrears. If in a month, the market value is below the FiT price, the generator will be paid a top up which is recovered from all ACT electricity consumers. If the market value is higher than the FiT amount, the generator will pay the difference, with the savings passed on to all ACT electricity consumers.

This financial arrangement means that the ACT's electricity consumption will eventually be completely offset by an equivalent injection of renewable generation into the NEM over the year. In 2016-17, 29.1% of the ACT's electricity consumption was offset by renewable generation<sup>16</sup>. This proportion will significantly increase in the coming years, so that by 2020-21, 100 per cent of the ACT's annual electricity consumption will be

<sup>15</sup> [www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/pricing-reviews-energy-services-publications-solar-feed-in-tariffs-201819/final-report-solar-feed-in-tariff-benchmarks-201819-june-2018.pdf](http://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/pricing-reviews-energy-services-publications-solar-feed-in-tariffs-201819/final-report-solar-feed-in-tariff-benchmarks-201819-june-2018.pdf)

<sup>16</sup> 2016-17 Annual Feed-In Tariff Report, December 2017.

offset by renewable generation over the year. Therefore, the ACT Government may wish to further consider NCE methodologies that recognise the contracts for difference with large-scale renewable generators. This may be more straightforward beyond October 2019, when all successful large-scale FIT supported capacity is expected to be generating.

**Recommendation:** This review recommends that the methodology for determining the NCE be considered for review. In the interests of transparency, it is also suggested that the methodology be published and for consistency with other processes that any changes to the NCE rate be on a financial year basis.

## 2. PFiT Scheme

This section provides an overview of the performance of the PFiT Scheme to 30 June 2018. This includes aspects of participation and uptake, national uptake of solar PV systems and renewable energy generation.

The following analysis is based on interpretations of spreadsheet annual reports provided by Evoenergy and EPSDD. There are anomalies within and between the spreadsheets, along with missing key parameters for some PV systems, e.g. capacity and installation date.

Evoenergy are currently undertaking a data validation exercise to improve their data quality. The exercise involves re-entering all the generator parameters from the original PFiT Special Connection Request forms. This is expected to reduce the number of PV systems with zero or a blank cell for their capacity, as well as systems without a connection date. It may also reduce the number of PV systems that have indicative capacity factors outside the range expected.

### 2.1 Participation and Uptake

#### PV Systems

Prior to the introduction of the PFiT Scheme, it was estimated that there were about 400 rooftop solar PV systems in the ACT<sup>17</sup>. As at the end of June 2018, there was a total of:

- 10,428 PFiT generators with 32.943 MW<sub>DC</sub> capacity, and
- 11,298 Non-PFiT PV systems with 37.631 MW capacity<sup>18</sup>.

This brings the total DC capacity for micro and medium PV generators in the ACT to 70.6 MW<sup>19</sup>. The following figure shows the overall growth in the micro and medium PV systems sector in the ACT.

---

<sup>17</sup> Review of the *Electricity Feed-in (Renewable Energy Premium) Act 2008*, EPD, August 2015.

<sup>18</sup> ITP interpretation of data in the Summary tab of the spreadsheet 'ActewAGL FiT Report 2017-18\_V2.xlsx' provided by Evoenergy on 16 August 2018.

<sup>19</sup> This assumes the non-PFiT capacity is also reported as kW<sub>DC</sub>.

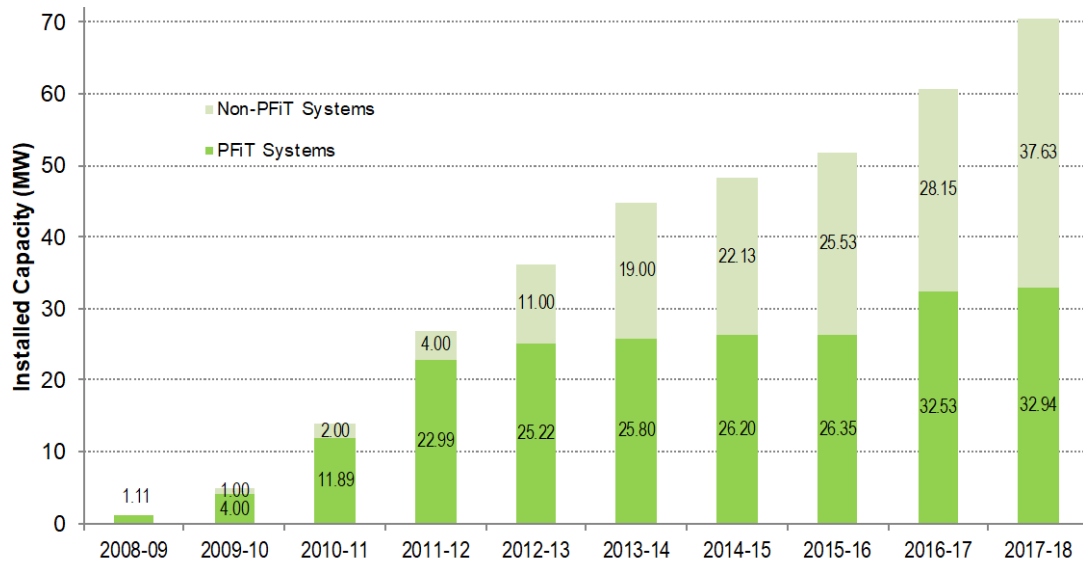


Figure 1: Cumulative micro and medium PV MW capacity installed in the ACT<sup>20</sup>.

### PFIT Generators

The following figure shows the number of PFIT micro generators by two PFIT rates and financial year. It shows a total of 10,229 connections excluding the five generators<sup>21</sup> on 40.04c/kWh and 159 micro and medium generators with no connection date information.

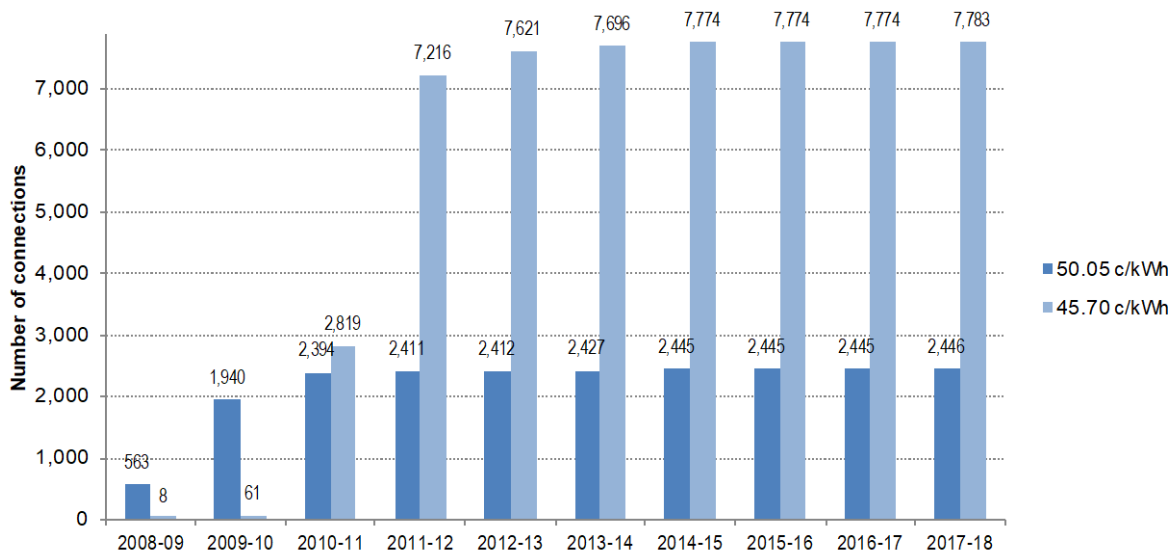


Figure 2: Cumulative connected micro generator numbers by PFIT rate and financial year.

It can be seen that 2011-12 had the most new micro generator PFIT connections. With the PFIT Scheme closing to new connections on 31 December 2016, it is expected that the increase in the number of connections in 2017-18 is associated with data quality issues.

<sup>20</sup> Excludes PFIT generators without a recorded installation date, data source 'ActewAGL FIT Report 2017-18\_V2.xlsx'.

<sup>21</sup> The August 2015 Review indicated that there were 3 generators on the 40.04c/kWh rate which closed on 30 June 2010.

The PFIT rate received by each generator depends on the timing of the application as detailed in Table 1. The distribution of installed capacity across each PFIT tariff level is shown in the following figure. For micro generators this data remains largely unchanged from the 2015 Review. The majority of system capacity is being paid 45.7c/kWh. However, for medium-scale systems, there has been a significant increase in installed capacity since the 2015 Review, predominately capturing the two lowest PFIT rates.

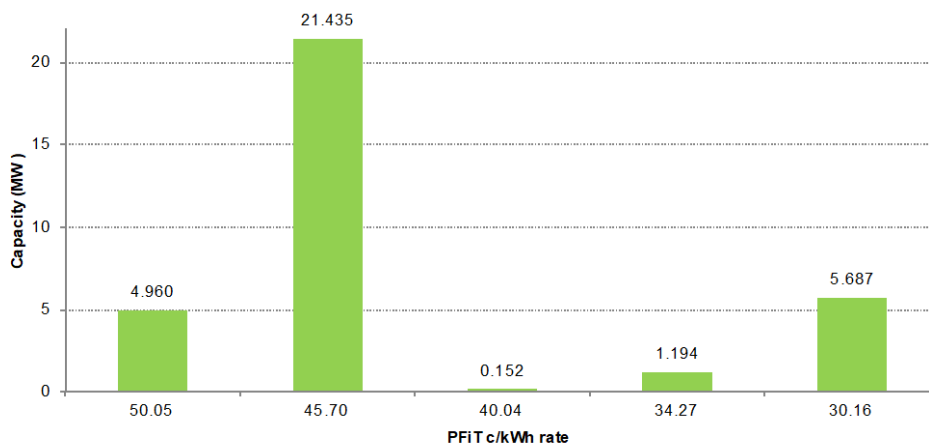


Figure 3: Connected micro and medium capacity MW<sub>DC</sub> by PFIT rate, total 33.429 MW<sub>DC</sub>

The table below shows the number of generators for each PFIT rate.

PFIT c/kWh	50.05	45.7	40.04	34.27	30.16
<b>Sizing eligibility (DC)</b>	< 10 kW	< 30 kW	10 to 30 kW	30 to 200 kW	< 200 kW
<b>type</b>	micro	micro	micro	medium	micro* and medium
No. of generators	2,476	7,901	5	12	43
kW DC	4,960.473	21,434.742	151.800	1,194.640	5,686.962
average size kW DC	2.00	2.71	30.36	99.55	132.25

Table 4: Number of generators by PFIT rate, as of 30 June 2018<sup>22</sup>.

Note \* while micro generators were eligible for the 30.16c/kWh PFIT, none may have applied in the two day period that this was available. It is not clear why the data source for this table does not have 10,438 PFIT connections. The following figure shows the new PFIT capacity added each financial year as well as the cumulative PFIT capacity.

<sup>22</sup> Figure 2 has different total numbers for the 50.05 and 45.70c/kWh tariffs due to 159 generators missing an install date in the data provided by Evoenergy. In addition, Table 4 may include generators that have been disconnected or moved.

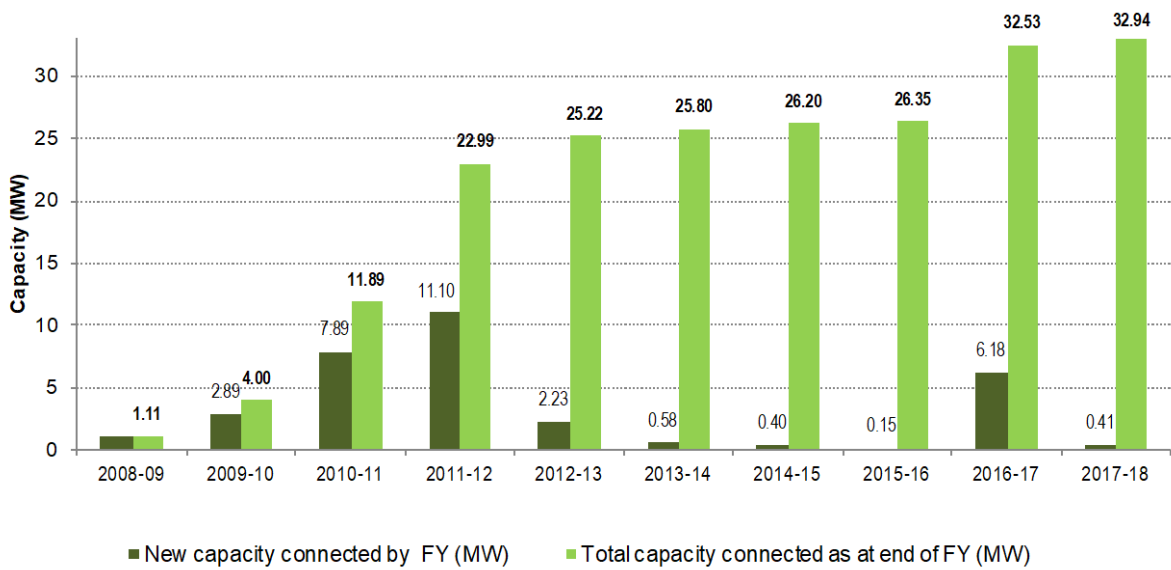


Figure 4: Connected micro and medium PFIT PV capacity MW<sub>DC</sub> added by financial year and cumulative capacity MW<sub>DC</sub>.

Note: The cumulative PFIT capacity of 32.94 MW<sub>DC</sub> shown in Figure 4 excludes the 159 generators with no connection date information.

The August 2015 Review reported that there were 44 community groups with a combined capacity of 243 kW that benefitted from a PFIT.

## 2.2 National Trends

The rate of uptake of micro and medium PV systems in the ACT has been broadly consistent with national trends.

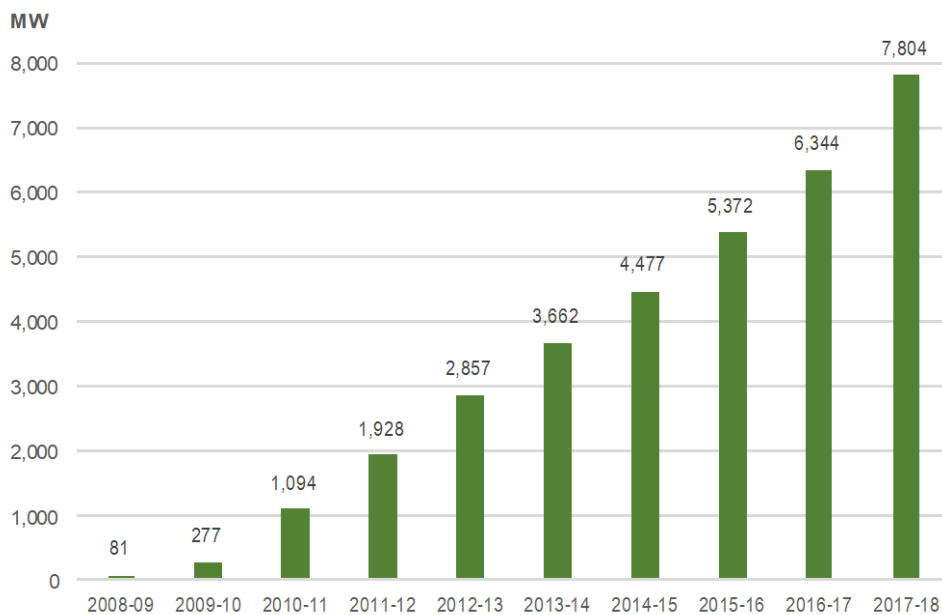


Figure 5: Australian cumulative PV installations capacity, from: <http://pv-map.apvi.org.au/analyses>

Note this figure includes some PV systems > 200 kW.

The August 2015 Review reported that the ACT has a PV installation rate amongst stand-alone houses that is comparable with other jurisdictions. This review was unable to locate a recent disaggregation of PV systems, so the following figure is by dwellings, which includes apartments.

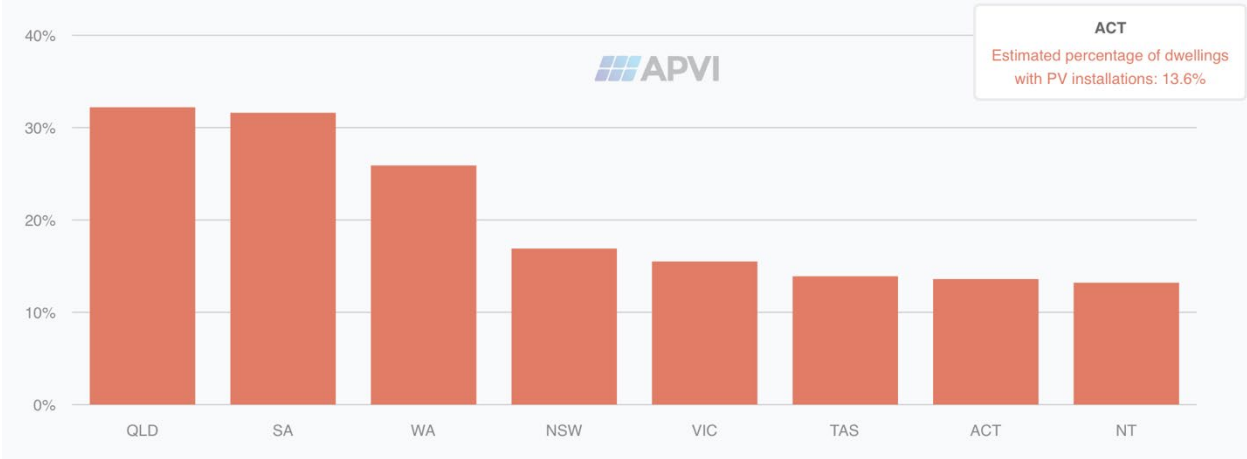


Figure 6: Data as of March 2018, from: <http://pv-map.apvi.org.au/historical#4/-26.67/134.12>

### 2.3 Renewable Generation

As at 30 June 2018, the cumulative renewable energy generation credited under the PFIT Scheme reached 256 GWh. The sum of PFIT meter reads in a financial year and the installed capacity at the end of the financial year is shown in the following figure. As expected, the overall trend shows credited PFIT generation to increase year on year with capacity.

Over time the PV module performance will degrade. Manufacturer warranties typically cite output to decline to 80% of rated output after 20 to 25 years. It is therefore expected that, over time, the annual credited PFIT generation will decline. However, the degradation effect is yet to clearly emerge, possibly due to the delayed connection of medium-scale PV systems as well as other factors, such as relocations.

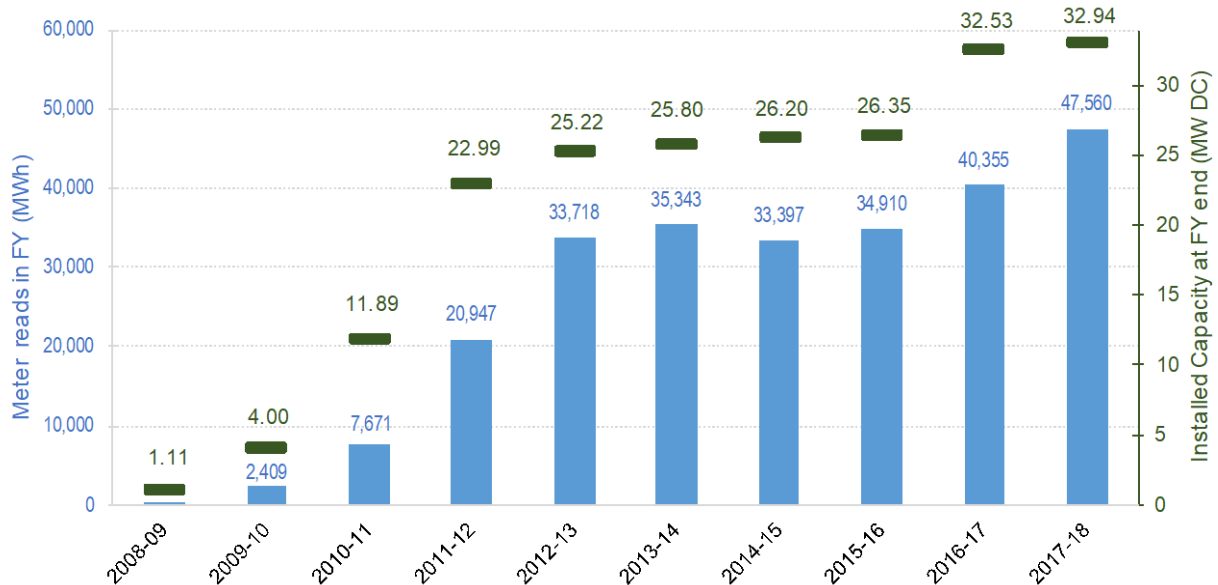


Figure 7: PFIT meter reads by financial year (MWh) and MW<sub>DC</sub> capacity at end of the financial year.

Credited PFIT generation in 2014-15 decreased compared to 2013-14, despite 400 kW<sub>DC</sub> of added capacity. Inter-annual variability such as this would be expected due to the solar resource variations between years. However, NASA satellite data for the ACT suggests a slightly increased solar resource for 2014-15 (compared to 2013-14) and some would expect that the trend would actually show an increase in ‘generation’, even after factoring in annual degradation.

Evoenergy were consulted on the possible reason for the reduced ‘annual generation’ in 2014-15. In the absence of other information, ITP’s assessment is the decrease may partially be due to the reported ‘annual generation’ actually being the sum of PFIT meter readings in a financial year, which is different to actual generation in a financial year. The ‘2014-15 Annual Feed in Tariff Report’ (Dec 2015) also mentions the implementation of a new billing system by the Distributor and this may also contribute to some of this variance.

The methodology for reporting ‘generation’ by financial year is not specified in the Evoenergy dataset. During this review, it was clarified that the reported ‘annual generation’ is based on meter readings during the financial year. Due to the ‘90-day’ meter read period<sup>23</sup>, this is not the same as the actual PV generation during the period 1 July to 30 June.

Considering the PFIT Scheme was closed to new connections on 31 December 2016, the additional capacity in 2017-18 is worth noting. Evoenergy were consulted on

<sup>23</sup> A meter read in the first week of July has all its output credited in Q1 even though the majority of the output was in Q4 of the previous financial year. In addition, the ‘90-day’ meter read period is plus or minus a few days due to a variety of factors, so it is feasible that some PFIT meters may not be read four times per financial year.



possible reasons for this and it may warrant further investigation, after they complete their data validation exercise.

The PFIT Scheme’s meter read amount of 47,560 MWh in 2017-18 is a small proportion of annual electricity sales in the ACT. This is illustrated in the following figure.

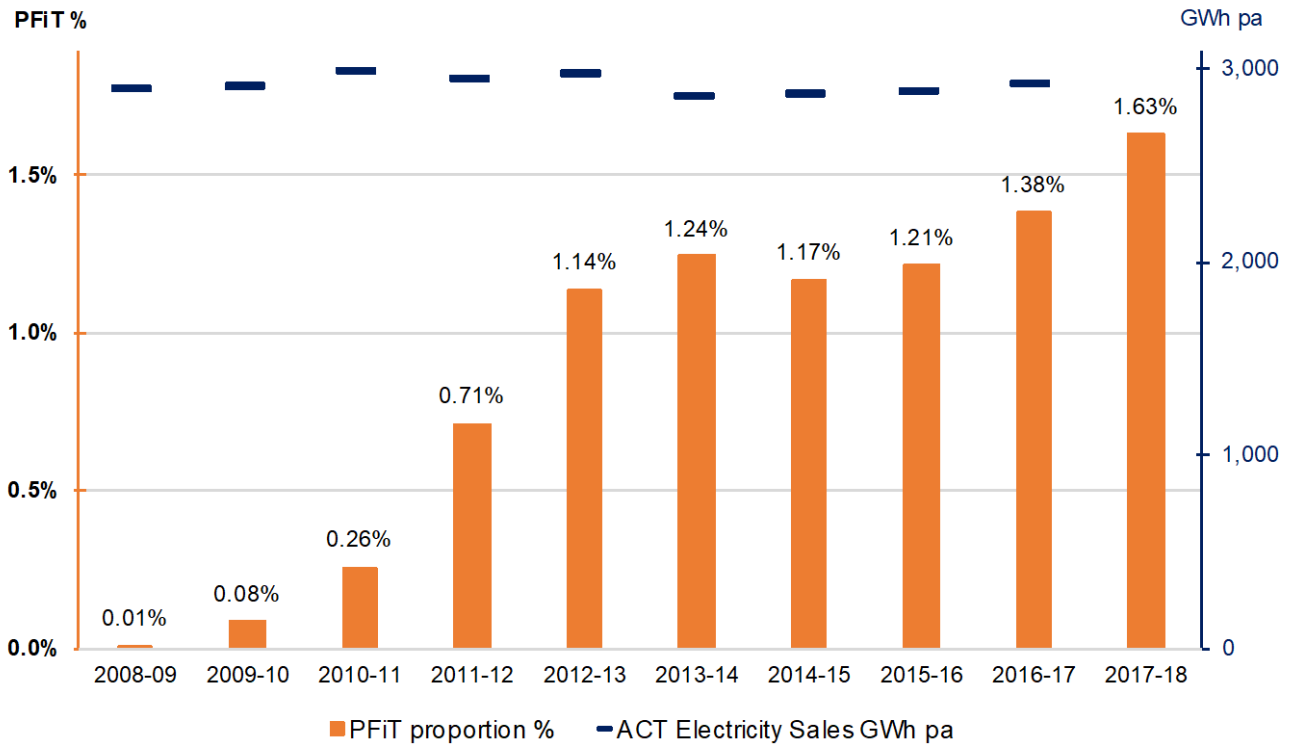


Figure 8: PFIT Scheme annual credited generation as a per cent of all ACT annual electricity sales<sup>24</sup>.

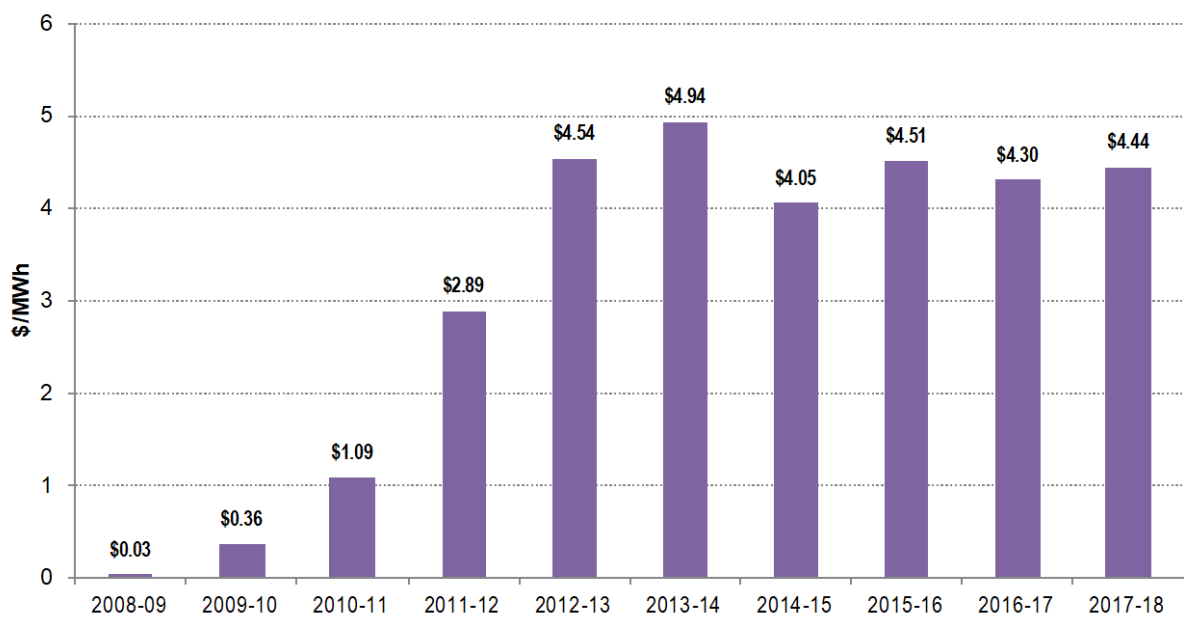


Figure 9: Pass through \$/MWh cost of PFIT Scheme by financial year.

<sup>24</sup> The figure for 2017-18 total electricity sales is not yet available, so the figure for 2016-17 has been used as an approximation, data source 'ActewAGL FIT Report 2017-18\_V2.xlsx'.

Figure 9 shows the additional cost to reimburse electricity retailers, (PFIT – NCE) divided by all ACT financial year electricity consumption from the grid.

### **Indicative Capacity Factors**

Annual capacity factor is a commonly used metric used to assess a PV system's performance and compare the performance of PV systems of different sizes. It is calculated as a ratio of the electricity produced by the system over a year divided by the electricity that would have been produced by the PV system if it had of been producing at full capacity 24 hours per day for the same period.

Typically for a north facing, fixed tilt, rooftop PV system in Canberra, a capacity factor for a well performing system is expected to be between 15% and 20%. For example, a system generating 1,650 kWh/kW<sub>DC</sub>/year has a capacity factor of 18.8%.

An indication of capacity factors for all PFIT systems was calculated based on data provided by Evoenergy for 2017-18. The average, indicative capacity factor for micro PV systems was 15.2% and for medium-scale PV systems it was 19.4%. However, it should be noted that this is only an indication of capacity factor due to the '90-day' meter read period meaning that the 'annual generation' reported is unlikely to be for 365 days.

A number of micro PV systems show poor performance, with about 14% of micro PV systems having an indicative capacity factor at or below 10%, which includes the 3% of micro PV systems that have an indicative capacity factor of 0, that is, not generating at all. About 2% of micro PV systems have an indicative capacity factor above 25% which may indicate additional DC capacity or just that these systems had five meter reads during 2017-18.

For the medium-scale PV systems, about 9% show an indicative capacity factor below 10%. About 2% of medium-scale PV systems have an indicative capacity factor above 25%.

The distribution of indicative capacity factors is shown in Figure 10.

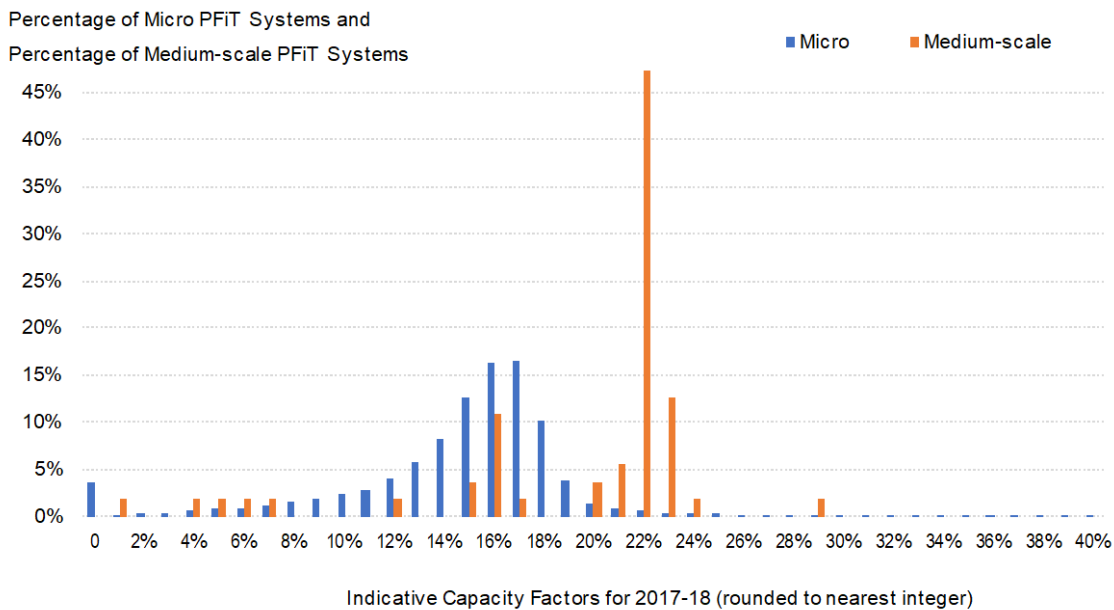


Figure 10: Histogram of Micro and Medium Generators' 2017-18 Indicative Capacity Factors.

The apparent poor performance of some PV systems could be due to either data integrity issues or a number of technical reasons such as shading, suboptimal orientations, dust or component issues.

The majority of the medium-scale PV systems achieved indicative capacity factors between 20% and 25%. This is likely to be due to the use of single-axis trackers that allow the PV modules to follow the movement of the sun throughout the day.

About 2% of both micro and medium generators appear to be generating with indicative capacity factors in excess of 25%. This warrants further investigation, as while this could be due to meter read or data quality issues, it could also be due to generators having additional DC capacity added beyond their registered capacity value.

The addition of DC capacity to existing systems beyond the approved PFIT capacity of the connection is inconsistent with the intent of the Act.<sup>25</sup>

This is a priority inclusion for the guidance material on interpreting the intent of the Act and should be implemented first as part of Evoenergy's task to publish a Guide to the Act.

**Recommendation:** That the ACT Government, in requesting that Evoenergy publish a Guide to the Act, advise them that information regarding PV system alterations should be prioritised. This is to ensure customers are aware of the financial implications of adding capacity to existing systems beyond the approved capacity of the connection.

<sup>25</sup> The Act makes provision for PFIT customers to make changes to compliant systems without affecting their premium feed-in tariff payments provided total capacity is not greater than the total capacity of the old generator when the old generator was first connected to the network.

### 3. Administration and Reporting

The August 2015 Review indicated that stakeholders had concerns about the PFIT Scheme's administrative arrangements. This was described as the issue of the role of the distributor not clearly being defined in the legislation and the role of the then Environment and Planning Directorate (EPD) as the Government agency with policy oversight. The August 2015 Review indicates that this contributed to less efficient decision-making processes that point to deficiencies in the legislative framework in relation to role definition and in administrative support processes implemented under the legislation.

The August 2015 review cited the example of the distributor's Special Connection Request form not capturing sufficient information to resolve issues. The sample Special Connection Request form provided by Evoenergy for this review, dated May 2011, is similar to the Evoenergy's Special Connection Request form currently available from their website<sup>26</sup>. However, the latter form includes a field for date of connection for the PV and inverter as well as collecting the inverter's nominal and rated output power, (previously only one date of connection and the inverter's AC Power was requested).

Amendments to the legislation since the August 2015 Review have not changed the administrative responsibilities. ITP's view is that the administrative issues identified in the Aug 2015 Review are not assisted by lack of definition in some of the generation measurement terms used in legislation.

#### 3.1 The Act

This report's comments are specific to Republication No. 13, (32 pages, 13 Sections) of the Act effective 16 June 2017. A history of the Act and its revisions and instruments is provided at Annex B.

The key terms include:

- renewable energy generator (Section 5B),
- capacity (Section 5C),
- compliant (Section 5E), and
- eligible entity (Section 5F).

Section 5D defines the following terms:

***‘medium renewable energy generator*** means a renewable energy generator that has a total capacity more than 30kW but not more than 200kW.

***micro renewable energy generator*** means a renewable energy generator that has a total capacity not more than 30kW.'

---

<sup>26</sup> [www.evoenergy.com.au/key-documents](http://www.evoenergy.com.au/key-documents)

This report uses these terms (as defined in Republication No. 13) which is available from the website: [www.legislation.act.gov.au/a/2008-21/default.asp](http://www.legislation.act.gov.au/a/2008-21/default.asp)

While Revision 2 of the Act (7 March 2011) implied the capacity thresholds are kW<sub>DC</sub>, it is not clear that this has been consistently applied throughout the administration of the PFIT Scheme.

### 3.2 Responsibilities

Section 6 Clause 2 and Clause 3 of the Act states:

- (2) It is a condition of the electricity distributor's licence that the distributor must, on application by an eligible entity—
- (a) connect a renewable energy generator to the distributor's network to enable electricity generated by the generator to be supplied to the network; and
  - (b) reimburse the NERL retailer that supplies electricity to the eligible entity's premises the difference between—
    - (i) the amount payable under subsection (3) for electricity generated by the generator to be supplied to the network; and
    - (ii) the normal cost of that electricity; and
  - (c) pass on to the eligible entity the additional metering costs in relation to electricity generated by the generator<sup>27</sup>.
- (3) The NERL retailer must, on application by an eligible entity, pay the eligible entity, in accordance with section 8, for the total amount of electricity generated by the renewable energy generator on or after the day the application is made.'

Thus the retailer pays the eligible entity the premium FiT for electricity generated. The retailer is reimbursed the additional cost (premium FiT minus the normal cost of electricity) by the distributor. The distributor is able to incorporate this additional cost into its regulated network charges paid by all ACT electricity consumers.

As of 1 January 2018, Evoenergy was the Distribution Network Service Provider (DNSP) in the ACT. Previously, this company was named ActewAGL Distribution. The main retailer for the PFIT Scheme in the ACT is ActewAGL Retail. There are seven other electricity retailers in the ACT that may also have PFIT customers.<sup>28</sup>

---

<sup>27</sup> The Australian Energy Market Commission's Power of Choice reforms allow for competition in the provision of metering from 1 December 2017.

<sup>28</sup> Australian Energy Regulator, State of the Energy Market, 2017.

### 3.3 PFiT Scheme Implementation

Customers originally interacted with the distributor (ActewAGL Distribution) and the retailer (ActewAGL Retail) to access the PFiT Scheme. However, for ongoing issues it appears to be unclear for customers as to who has responsibility.

An easy-to-understand overview of the Act does not appear to be published online. As a result, customers may not be clear on their rights and obligations, and who to speak to, for advice. Evoenergy reported customers attempting to interpret the Act in their disputes with home sellers, real estate agents, ActewAGL Retail, Evoenergy and others. Some PFiT holders also expressed confusion about their rights when moving, selling or demolishing.

While some information is made available by ActewAGL Retail (see Annex C: FAQs), it is questionable if it is the role of one of the retailers to provide and maintain this information<sup>29</sup>.

**Recommendation:** It is recommended that Evoenergy, as the PFiT Scheme administrator, publish an easy-to-understand Guide to the Act to assist stakeholders understand the intent, definitions and key dates from the Act in a consistent manner. This guide should differentiate information according to the date of entering into contract for installation of the generator. It should replace the existing information made available by ActewAGL Retail and clarify the circumstances in which feed-in payments can be affected (e.g. capacity additions, component replacements, addition of battery storage devices, selling a home, demolishing a home, relocation of generators and procedures to voluntarily leave the PFiT Scheme).

The following is provided as an example content for the PFiT Guide. The format used by other state jurisdictions for their feed-in tariff schemes may also be instructive<sup>30</sup>. Evoenergy should develop the PFiT Guide in consultation with EPSDD and when finalised, EPSDD should provide a link to the Guide in the rooftop solar section of the EPSDD website<sup>31</sup> and ActewAGL Retail should be requested to remove the PFiT FAQs from their website.

The PFiT Guide should address commonly asked questions on eligibility as well as clarifying issues and processes such as:

- The differences between alternating current (AC) and direct current (DC) electricity. DC electricity is what PV arrays produce, as such a PV array's capacity is typically reported in kW<sub>DC</sub>. An inverter is used to convert the PV array's DC electricity into AC electricity suitable for export to the grid. The DC

---

<sup>29</sup> It is noted that these FAQs refer to the 'owner occupier' rather than 'eligible entity'. The latter broadens the definition to allow for community entities to be owners and applied from March 2011 following a revision to the Act.

<sup>30</sup> For example see: [www.sa.gov.au/topics/energy-and-environment/energy-bills/solar-feed-in-payments](http://www.sa.gov.au/topics/energy-and-environment/energy-bills/solar-feed-in-payments)

<sup>31</sup> [www.environment.act.gov.au/energy/cleaner-energy/rooftop\\_solar](http://www.environment.act.gov.au/energy/cleaner-energy/rooftop_solar)

power rating of the PV array can be more than the AC power rating ( $kW_{AC}$ ) of the inverter. While the Act defines capacity in  $kW_{DC}$ , networks and retailers often focus on the inverter's  $kW_{AC}$  capacity. This is because the rules for connecting PV systems to the network focus on the inverter capacity in  $kW_{AC}$ . Clarifying this issue may reduce some of the confusion customers face when dealing with the following issues.

- The process for moving a generator eligible for PFIT to a new premises. Customers could be advised to contact Evoenergy on their specific circumstances of their new premises and to confirm the approved peak capacity ( $kW_{DC}$ ) of the existing PV system and terms and conditions of the permission to connect. If the customer is also considering switching retailers, they should check that the new retailer is willing to accept them as a PFIT customer so that they can continue to receive PFIT payments.
- The process for receiving PFIT payments if moving into a premises with a generator connected under the PFIT Scheme. Customers could be advised to ask if their retailer is willing to accept them as a PFIT customer. The retailer can then check when the PV system was installed, what PFIT rate the system is eligible for and advise on the arrangements for transferring the generator contract to them.
- The implications of adding battery storage. Customers could be advised they will stop receiving the PFIT if they install an energy storage device connected to the eligible generator. Customers who install battery storage connected to their eligible generator may be able to receive a retailer solar feed-in tariff and should be encouraged to seek out a variety of energy offers from retailers.
- The instances where customers may need to pay for metering to be upgraded from gross to net, and that either Evoenergy or a retailer will upgrade the meter at the customer's cost.
- The process for voluntarily surrendering eligibility for the PFIT.

The Guide will also need to acknowledge that the implementation of the PFIT Scheme is via a contract between the retailer and the PFIT recipient. This contract will outline the obligations between both parties. The documented obligations in these contracts are likely to be consistent with the Act, as of the date of signing the contract.

A sample PFIT contract dated 20 November 2009 is available online<sup>32</sup>. Section 2(f) of this contract states that eligible PFIT customers 'must satisfy all other requirements of the Feed-in Act as amended from time to time'. It does not appear to obtain a similar obligation for the retailer. Thus, legislative revisions to the Act, after the date of signing

---

<sup>32</sup> [www.actewagl.com.au/Product-and-services/Offers-and-prices/Prices/Residential/ACT/Feed-in-schemes/~media/ActewAGL/ActewAGL-Files/Products-and-services/Green-energy/ActewAGL-FiT-contract.aspx](http://www.actewagl.com.au/Product-and-services/Offers-and-prices/Prices/Residential/ACT/Feed-in-schemes/~media/ActewAGL/ActewAGL-Files/Products-and-services/Green-energy/ActewAGL-FiT-contract.aspx)

the retailer's contract, may not always be relevant to disputes regarding the retailer's interpretation of its obligations.

Section 13 of the sample contract examined specifies the dispute resolution process. It states:

'If you have a dispute with us we will try to resolve it with you.

- (a) If we cannot resolve that dispute informally with you then you may ask us to formally review the issue which has caused the dispute.
- (b) You must do so in writing stating fully the basis of your complaint against us no later than 28 days after the dispute has arisen. We will then formally review your complaint and advise you of our decision in relation to it within 28 days of you giving notice to us under this clause.
- (c) If, having advised you of our decision, you are still unhappy you may be entitled to refer your complaint to the ACT Civil and Administrative Tribunal or take other action.
- (d) You must continue to perform your obligations under this contract despite any ongoing dispute.'

The following table provides an overview of the nature and timing of revisions to the Act and its instruments.

FY	Date	Revision	Instruments	Cumulative installs	Notes
2008-09	28-Feb-09		CN2009-05		Commence 1 March 2009 Premium rate 50.05c, NCE 6c/kWh Owner occupier
	1-Mar-09	R1	DI2009-22, NI2009-83		
	2-Mar-09	R1 (RI)			
	30-Jun-09			339	
2009-10	1-Jul-09				
	30-Jun-10			1,454	
2010-11	1-Jul-10		DI2010-42, DI2010-43, NI2010-346		Premium rate 45.7c, micro to 30 kW, NCE 6c/kWh Capacity DC, eligible entity
	7-Mar-11	R2			
	30-Jun-11			4,101	
2011-12	1-Jul-11		DI2011-48		Premium rate 45.7c, 30 MW cap
	12-Jul-11	R3			
	13-Jul-11	PfIT	<b>Closes</b>		
	12-Dec-11	R4			
2012-13	14-Feb-12		DI2012-15		Occupier 35 MW cap
	30-Jun-12			8,494	
	1-Jul-12	R5			
	31-Aug-12		NI2012-444		
2012-13	17-May-13		NI2013-219		NERL retailer NCE 6c/kWh NCE 7.5c/kWh
	30-Jun-13			9,663	
	1-Jul-13				
2013-14	30-Jun-14			10,025	



FY	Date	Revision	Instruments	Cumulative installs	Notes
2014-15	1-Jul-14				
	29-Aug-14		NI2014-414		NCE 6.06c/kWh
	20-Nov-14	R6			Educational institution
	17-Apr-15	R7			Mr Fluffy demolish
	3-Jun-15		DI2015-102		Block 708, Majura 2.3 MW
	16-Jun-15	R8			Exclude batteries, deadline 31 Dec 2016
	30-Jun-15			10,270	
2015-16	1-Jul-15				
	15-Sep-15		DI2015-263		Reporting
	5-Nov-15	R9			Add or eligible impacted property to (Fluffy) affected residential premises
	4-Dec-15		DI2015-313		Block 1470, Tugeranong 11.18 MW DC
	23-Feb-16	R10			Retrospective change to make medium generators covered by 2011 PFIT rate Determination
	25-Feb-16	R11			Remove retrospective change
	27-May-16		NI2016-251		NCE 5.2c/kWh
	30-Jun-16			10,304	
2016-17	1-Jul-16				
	1-May-17	R12			Cooperatives
	16-Jun-17	R13			Utilities (Technical Regulation) Act 2014
	30-Jun-17			10,394	
2017-18	1-Jul-17				
	1-Jan-18		NI2017-687		NCE 9.4c/kWh
	30-Jun-18			10,438	

Table 5: Overview of timing of Act Revisions and Instruments.

For the 1,454 generators connected by 30 June 2010, their contract is likely to be consistent with Revision 1 of the Act. For the 2,647 systems connected in 2010-11, the majority are likely to have been connected before Revision 2 of the Act. These customers are likely to have the same contract as used in 2009-10.

Revision 2 of the Act came into effect on 7 March 2011. Customers connected after this point, should have a contract that uses the term eligible entity rather than owner occupier, which carries with it implications for the rules for transferring ownership of the PFIT.

This issue further highlights the need for a Guide to the PFIT Scheme, as advice provided to one customer may not, technically, apply to another customer. This may explain some of the confusion householders have with the issue of transferring PFIT entitlements.

### 3.4 Scheme Administration Costs

During the consultations, Evoenergy raised the issue of the administration costs that they incur in administering the PFIT Scheme. Evoenergy argue that they should be paid reasonable costs by the ACT Government for their time spent administering the PFIT Scheme.

The approach to reimbursing administration costs of the large-scale FiT in the ACT has recently been amended to allow for reimbursement on a cost recovery basis. This approach may be relevant to the consideration of how scheme administration costs could be reimbursed for the PFIT Scheme.

**Recommendation:** That the ACT Government consider developing a methodology for reimbursing Evoenergy's PFIT Scheme administration costs, following amendments to the ACT large-scale FiT to allow for administration cost recovery. The aligning of approaches could lead to potential process efficiency savings.

### 3.5 Reporting Requirements

The Act was amended in June 2015 requiring the Minister to publish a financial year annual report. Republication No 13 of the Act states this report is to include:

- '(a) the number of compliant renewable energy generators installed on premises in the ACT;
- (b) the total capacity of compliant renewable energy generators installed on premises in the ACT;
- (c) the costs under this Act on electricity users.'

Disallowable instrument (DI2015-263) notified on 14 September 2015, requires the NERL Retailers to provide the Minister with information identifying the following for each and every relevant generator:

- 'i) payments made during each quarter of the financial year for the total electricity generated,
- ii) applicable premium rate,
- iii) suburb in which the relevant generator is located, and
- iv) whether the NERL Retailer was still associated with the relevant generator at the end of the financial year.'

It also specifies that the NERL Retailer must also provide information on the amount reimbursed by the electricity distributor for the PFIT.

The instrument also requires the Electricity Distributor to provide the Minister with information identifying the following for each and every relevant generator:

- 'i) electricity output during each quarter of the financial year,
- ii) applicable premium rate,

- iii) installed capacity at the date of connection,
- iv) suburb in which the relevant generator is located, and
- v) whether the relevant generator was still connected to the electricity distributor's network at the end of the previous financial year.'

As discussed in Section 1.6, ITP has reviewed Evoenergy's data to analyse financial year PFIT Scheme outcomes. ITP considers that consistent interpretation of data for reporting purposes could be improved by requiring additional specific data to be reported and improving the definition of specific terms used.

**Recommendation:** That the ACT Government amend Section 5(a) of the distributor's reporting requirement in DI2015-263 to include the additional items:

- vi) inverter rated output capacity ( $kW_{AC}$ ) and installed PV array capacity at Standard Test Conditions ( $kW_{DC}$ ) at the date of connection,
- vii) the Annual Generation Credited (kWh), defined as the sum of the meter reads that occur during the period 1 July to 30 June,
- viii) the number of actual meter reads for the Annual Generation Credited figure, and
- ix) the number of estimated meter reads for the Annual Generation Credited figure.

A detailed definition and methodology for providing an indicative estimate of the actual 'electricity output during each quarter of the financial year' (or just the estimated total output for the financial year) should also be considered, e.g. a linearly prorated figure based on the proportion of days in the billing period falling in the relevant quarter/financial year.

DI2015-263 also specifies that the electricity distributor must provide the Minister with information identifying the total amount it has reimbursed to each NERL retailer during the financial year.

The timing of these reports is by 30 September, following the completed financial year. Depending on the approach to defining 'electricity output during each quarter of the financial year', this date may need to be changed to 31 October to allow sufficient time for processing all relevant PV systems' '90-day' meter reads for prorated generation from the previous financial year.

For this review, ITP has been provided some of the electricity distributor's financial year spreadsheets<sup>33</sup>, some of which appear to contain retailers' data. ITP was not provided with any reports direct from retailers.

Retailer reporting is important as it provides a data set that can be validated against information from the distributor. Despite the retailer reporting requirement being legislated, it was not clear during the course of this review what the process was for

<sup>33</sup> The most recent file provided was on 16 August 2018 and is named 'ActewAGL FiT Report 2017-18\_V2.xlsx'.

EPSDD receiving these reports. Not validating retailers' reporting with the distributor's reporting may adversely impact overall data quality control.

**Recommendation:** That the ACT Government enforce Section 4 of Disallowable Instrument (DI2015-263) to require retailers to provide the Minister with an annual report on the PFIT Scheme. EPSDD should then undertake detailed cross-checking of the key financial year parameters between the retailers' annual reports and the distributor's annual report to ensure consistency or establish reasons for differences.

### 3.6 Annual Reports

The first annual report for 2014-15<sup>34</sup> was published by EPD in December 2015. The PFIT Scheme annual generation figures for 2008-09 to 2014-15 reported in the first annual report were different to those published in the August 2015 Review. The revised generation figures in the December 2015 annual report were explained with:

'The ACT Distributor has advised that these primarily relate to data conversions and transfers associated with the implementation of a new billing system.'

ITP's review of the PFIT Scheme data contained in the annual reports (e.g. number of generators and 'generation') indicates there are inconsistencies in data from one year to another. In some cases, an attempt is given to explain the reasons for changes to historical data and, in other cases, no explanation is attempted. While the inconsistencies are not significant (less than 5% difference), they are illustrative of an underlying issue with data quality management.

For example, the 2015-16 annual report has a different number of generators and 'generation amount' for the 2014-15 financial year compared to the 2014-15 annual report. The differences in data are highlighted in the following table.

---

<sup>34</sup> Available from: [www.environment.act.gov.au/energy/cleaner-energy/rooftop\\_solar/2014-15-annual-fit-report](http://www.environment.act.gov.au/energy/cleaner-energy/rooftop_solar/2014-15-annual-fit-report)

	<b>2014-15 (2014-15 Annual Report)</b>	<b>2014-15 (2015-16 Annual Report)</b>	<b>Difference</b>	<b>%</b>
Number of generators	9,950	10,270	320	3.1%
Installed Capacity MW	26.2	26.2	0	
'Generation' MWh	34,613	33,373	-1,240	-3.7%
'Total FiT paid'	\$13,704,878	\$13,704,878	0	

Table 6: PFIT key parameter revisions for 2014-15.

The 2015-16 annual report does not discuss the revision of the 2014-15 data shown in the above table.

However, page 5 of the 2014-15 annual report notes that:

'this is slightly lower than the output reported previously in the FiT Review for the year and also a decline from 2013-14 (35.4 GWh<sup>35</sup>).'

It also states:

'the ACT electricity distributor indicated that it was looking into the reasons for this decline and it is possible that the data could be revised.'

It is unclear to ITP why historical 'generation' data may need to be revised.

Another data quality issue may be related to the timing of meter reads<sup>36</sup>. For example, the 2015-16 annual report refers to 10,304 connected renewable energy generators. Examining the 'generation' data, indicates that 396 (about 4%) of these recorded no generation in the last quarter of 2015-16. This may be due to inverter or other component failures. However, other factors may also be involved, such as the timing of meter reads or eligible entities being in the process of demolishing a home and moving their PFIT generator entitlement to a different location.

As discussed in Section 1.6, ITP reviewed the data provided by the distributor against what is reported in the ACT Government's annual reports as required under Disallowable instrument (DI2015-263). ITP considers the accuracy and clarity of data could be improved if Annual Reports clearly document whether PV capacity figures reported are kW<sub>DC</sub> or kW<sub>AC</sub>, annual generation credited was reported in kWh, (as opposed to MWh) with the meter read timing issue clearly documented, and the terms

<sup>35</sup> For 2013-14's 'generation', this review uses the revised figure published on page 10 of the 2014-15 annual report which is 35,342,888 kWh.

<sup>36</sup> It is worth noting that, over the 20 year life of a PFIT entitlement, a meter read exactly every 90 days will be read more than 81 times. This means that at least one financial year will have 5 meter reads and the 'Annual Generation Credited' will be significantly higher than other years, for that generator.

'Total premium FiT paid to eligible entities' and 'Total amount reimbursed to retailers for PFiT obligations' are used and defined.

**Recommendation:** Ensure all future Annual Feed-in Tariff Reports:

- document clearly whether PV capacity figures reported are kW<sub>DC</sub> or kW<sub>AC</sub>,
- report installed PV capacity in both kW<sub>DC</sub> and kW<sub>AC</sub> and annual generation credited in kWh, (as opposed to MW and MWh) in the 'Small and Medium-scale FiT Scheme performance' section, and
- define key terms such as 'Total premium FiT paid to eligible entities' and 'Total amount reimbursed to retailers for PFiT obligations' and use these terms as opposed to 'Total FiT Paid'.

## 4. Safety

### 4.1 Access Canberra Inspections

In the ACT, the installation of a new PV system must be inspected by an electrical inspector, as per the ACT Electrical Safety Act 1971. Electricians issue a Certificate of Electrical Safety (CES) at the completion of the PV system installation, which is then audited for compliance by an ACT Government Electrical Inspector.

As reported in the 2015 Review, it was previously mandatory that all PV systems in the ACT be inspected by an electrical inspector and a CES issued prior to the system being turned on. This was due to historical issues of significantly higher rates of non-compliance in PV systems (9 to 18%) when compared to the general trend of all electrical installations (1 to 2%). This was, in large part, due to lack of familiarity with new technologies and standards, but also due to stricter requirements for PV system installations when compared to other electrical work, such as it being a *requirement* for installers to provide documentation, rather than a *recommendation*.

In recent years, there has been a significant improvement in installation quality, with new technology, a better understanding of rules, standards and processes leading to fewer compliance issues. This overall trend is reflected in the Access Canberra inspections data shown in Figure 11.

While inspections are still mandatory and a CES is still required, as of 16 of January 2017, Access Canberra updated procedures such that PV systems are allowed to be connected and start generating prior to the inspection.

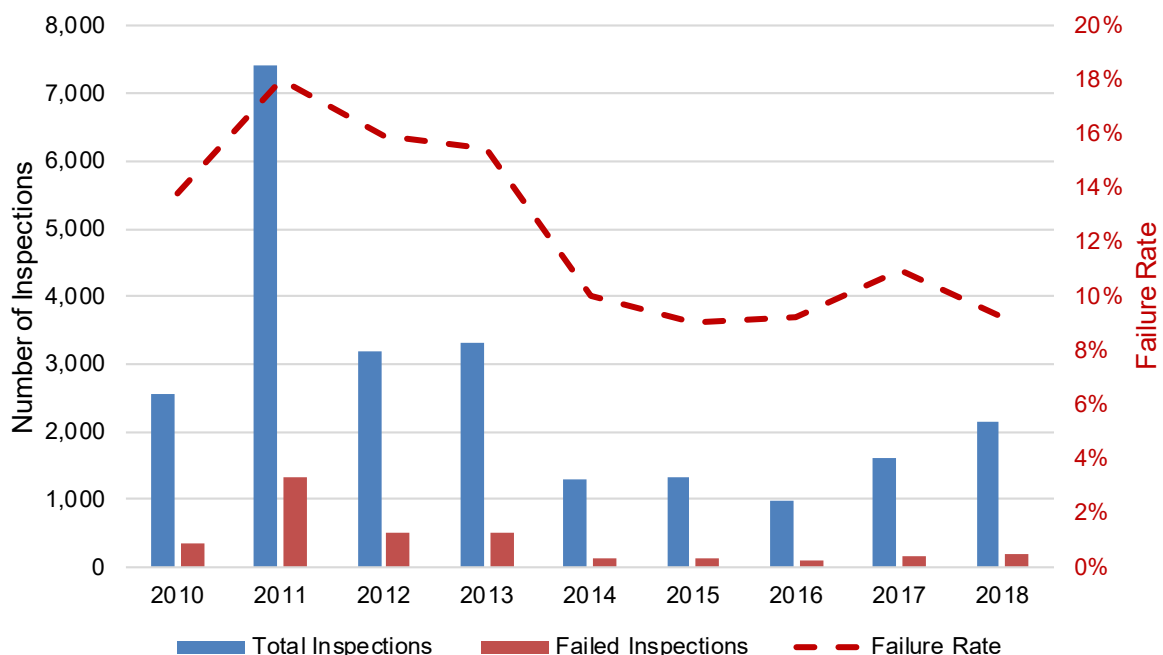


Figure 11: Historical PV Inspections in the ACT, Failures and Failure Rate by Year<sup>37</sup>

<sup>37</sup> Note that this data represents all PV installations in the ACT, and based on available data it is not possible to separate data from PFIT systems from non-PFIT systems.

## 4.2 CER inspections

The Clean Energy Regulator (CER) conducts inspections on a sample of small-scale solar generation units as part of its obligations under the Renewable Energy Target. This is inclusive of installations involved in the ACT's PFIT Scheme as well as all other small-scale PV installations in the ACT.

The purpose of these inspections is to ensure that PV systems meet all the installation requirements of the Small-scale Renewable Energy Scheme, and were eligible for Small-scale Technology Certificates (STCs) at the time the PV system was installed. In conjunction with the state and territory regulators and the Clean Energy Council, the inspection program findings also serve to assess and improve the quality of PV installations nationally and ensure that PV system installers meet applicable standards.

Under the CER's inspections program, PV installations are selected at random by the CER. Customers who own the system are contacted to approve that the inspection can proceed as it is not mandatory. An independent inspector will then visit the site to conduct a comprehensive inspection including rooftop installation checks, internal cable runs, safety switch voltage checks and sizing, all in compliance with Australian Standards, industry guidelines and any State/Territory and local government requirements.

The inspector submits the findings of the inspection to the designer, installer and agent who have a right of reply and then incorporates any responses in a final report to the CER. Overall system findings range from:

- best practice,
- compliant,
- adequate,
- substandard, or
- unsafe.

An *unsafe* system is defined as one possessing a possible safety hazard which poses an imminent risk of damage to property or persons<sup>38</sup>. A system that is assessed as *substandard* is less serious but requires further work be undertaken to rectify the installation<sup>39</sup>.

---

<sup>38</sup> According to the CER, unsafe systems have issues attributable to poor installation practices and/or the use of inappropriate hardware, and indicate a failure to comply with basic electrical installation competencies. Examples of reasons why a system may be assessed as unsafe include:

- direct current isolator enclosures, or junction boxes, that were not suitably installed to prevent water ingress
- signs of water damage present
- issues with the panel mounting, or
- exposed live parts.

<sup>39</sup> The CER defines a substandard system as one that:



The CER shares the information with the state or territory electrical safety regulator, the Clean Energy Council and also publishes regular reviews of the statistics on their website. The CER inspection program provides a useful representative basis to compare jurisdictions and discuss quality and trends. As of 31 August 2017, a total of 20,750 PV systems had been inspected nationally. Of these 758 (4%) were categorised as unsafe, and 3,546 (17%) were categorised as substandard.

In the ACT, 197 systems have been inspected, with 9 categorised as unsafe (5%) and 20 categorised as substandard (10%). This is statistically small sample but appears to be in-line with the national averages, as shown in the following figures.

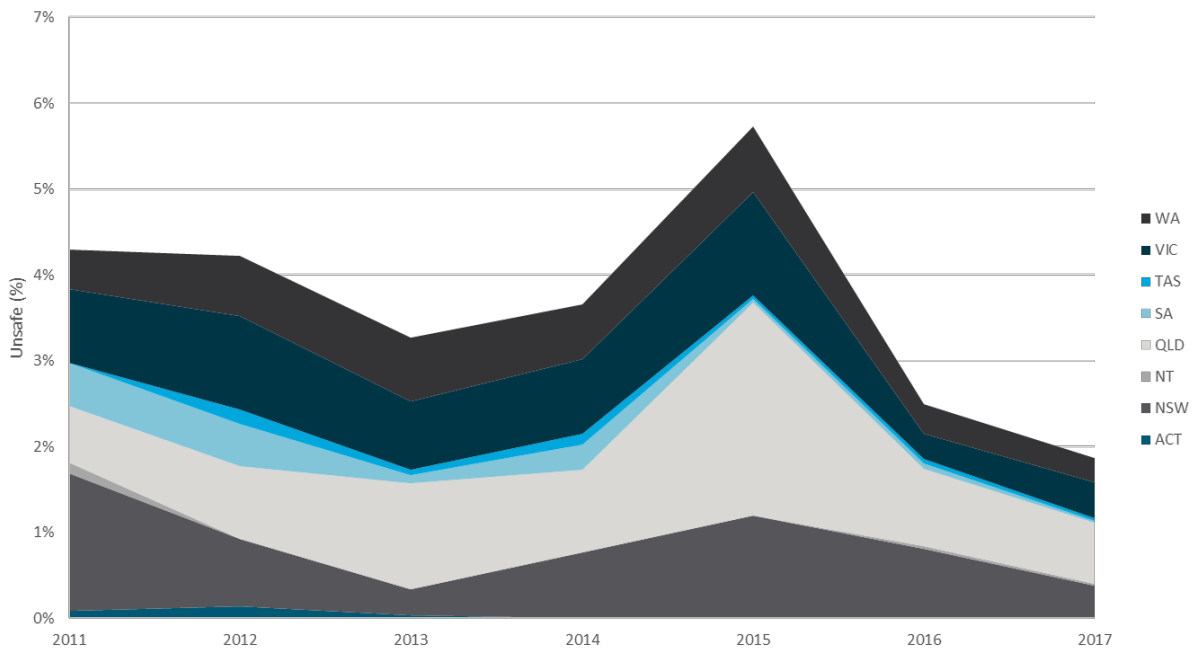


Figure 12: State/Territory Contribution of Unsafe Systems per Year (CER 2018)

- 
- does not meet key clauses in the standards and requirements for installation and may lead to premature equipment failure or other issues
  - does not pose an imminent safety risk, or
  - the installation work and/or the equipment should be improved to meet relevant standards and industry guidelines.
-

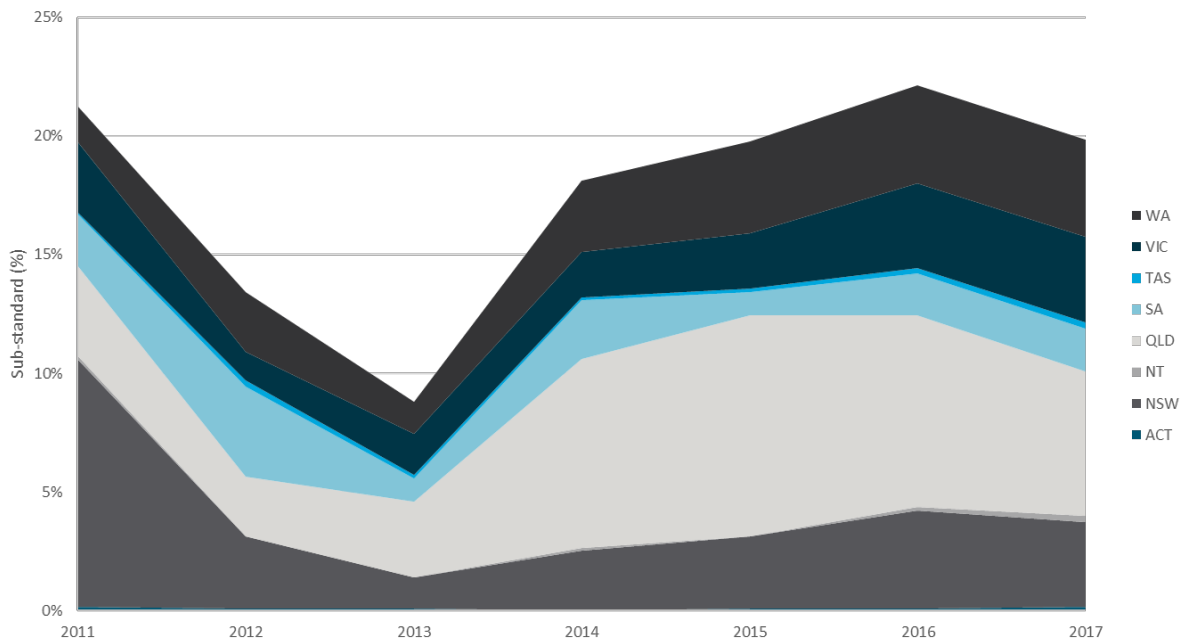


Figure 13: State/Territory Contribution of Substandard Systems per Year (CER 2018)

On a national basis, the latest CER report shows a significant reduction in the number of systems being classified as unsafe, making up only 1.9% of systems inspected in the 2017 inspections, a strong improvement of the previously reported averages. The CER reports that this ‘improvement appears to be attributable to improved installations of direct current isolators which have been influenced by changes to the Australian Standards, education and training.’

### 4.3 Anti-islanding

An electrical generation source is ‘islanded’ when it is the only source of supply into a section of the distribution network. Anti-islanding protection is an important feature of PV inverters as it ensures electric current is not injected into the grid during grid outages, which would affect the safety of grid workers during restoration works and also protects network equipment. An anti-islanding test is undertaken as part of the commissioning of a PV system and ensures that inverters safely disconnect and reconnect to the electricity grid in the case of a power disruption.

Evoenergy requests that all inverters connected to the ACT’s distribution network have an electrician test the anti-islanding and protection functions of the inverter every five years. The test is to be arranged at the system owners’ expense and requires the submission of a report to Evoenergy. To date 6 of the 10,219 PV inverters tested have failed. ITP is not aware of other jurisdictions in Australia that request inverter anti-islanding tests every five years.

During the review meetings with Evoenergy, it was noted that some customers do not respond to the request to conduct an anti-islanding test and the options for Evoenergy pursuing non-compliance are limited (2108 from 2917 cases are outstanding, with some systems not being tested for as many as 10 years). Evoenergy’s options for taking further action (e.g. PV system disconnection) are limited due to potential legal concerns.

This is the case for both PFIT and non-PFIT PV systems in the ACT. If the testing data indicates that anti-islanding testing should be compulsory every five years, stronger powers for Evoenergy would need to be considered by amending the Utilities Act rather than the PFIT Act.

**Recommendation:** That the ACT Government consider commissioning analysis of the anti-islanding test data that Evoenergy collects to investigate if amendments to the *Utilities Act 2000* are required to enable Evoenergy to disconnect PV systems that are non-compliant with requests to conduct anti-islanding tests.

## 5. Economic Outcomes

This section provides an overview of trends over the PFIT Scheme to 30 June 2018. It describes the approach used to analyse the economic costs and benefits to the ACT over the life of the PFIT Scheme. It also presents the outcomes of that analysis and provides commentary on unpriced costs and benefits.

At the time the PFIT Scheme commenced on 1 March 2009, rooftop solar PV was at the relatively early stages of uptake in Australia. Since then, growth in uptake has been strong, assisted by upfront incentives under the Federal Government's Photovoltaic Rebate Program (PVRP), the Solar Homes and Communities Program (SHCP<sup>40</sup>) and the Small-scale Renewable Energy Scheme (SRES), as well as rapid declines in installed PV system costs over the last decade.

Post PFIT Scheme closure to new participants on 13 July 2011, strong interest in rooftop PV has continued in the ACT with average PV system sizes growing as the economics of PV systems improve and as more commercial sized systems are installed for business. The number of accredited PV system installers in the ACT in 2017 is at its highest level<sup>41</sup>, since solar PV installations began.

### 5.1 Costs and Benefits for the ACT

The following analysis updates previous analysis undertaken by EPSDD for the 2015 Review. It focuses on the net economic costs and benefits of the PFIT Scheme to the ACT.

The analysis considers the following in 2018 dollar terms over the life of the PFIT Scheme, from when the first PFIT payment is made in 2009 to the last payment in 2036-37:

- costs to PFIT Scheme participants of PV installation and maintenance,
- costs to Evoenergy in administration of the PFIT Scheme,
- benefits in the form of avoided electricity grid purchases, and
- benefits in the form of avoided greenhouse gas emissions, assuming a value for avoided emissions of \$25/tonne of CO<sub>2e</sub>.

The results are shown in the Figure 14 which shows the quantifiable economic costs and benefits. The increased cost of electricity for ACT consumers is excluded as this is a transfer payment to PFIT eligible entities. While not part of the net economic assessment, PFIT Scheme eligible entities benefit from the PFIT amount credited for their PV generation.

---

<sup>40</sup> The PVRP was rebranded as SHCP in November 2007 and closed to new applicants on 9 June 2009.

<sup>41</sup> Clean Energy Council, 2018, Clean Energy Australia 2018.

Other costs and benefits which are less quantifiable, such as benefits from the reduction in daytime network peaks or the reduction in wholesale electricity prices because of the merit order effect, are also discussed in the following section.

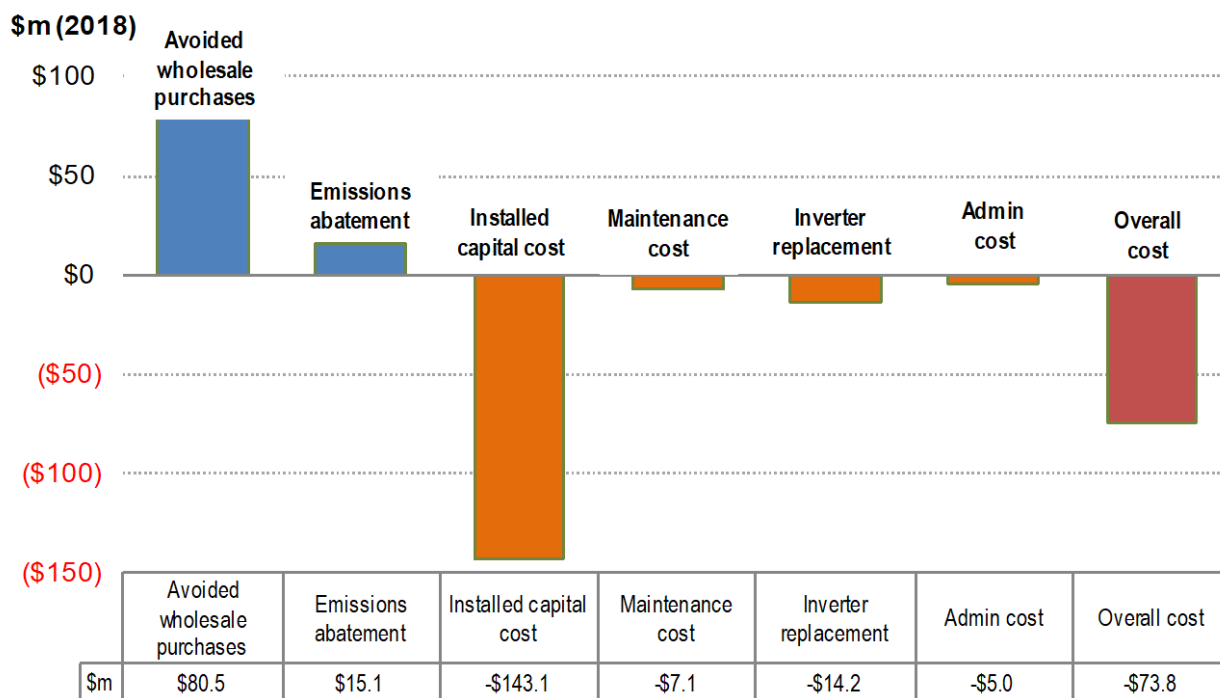


Figure 14: PFIT Scheme lifecycle costs and benefits, (\$ 2018).

**Notes:** Key assumptions for this figure include:

- Costs and benefits modelled to 30 June 2037.
- Nominal discount rate of 7% applied to all costs and benefits.
- Average Consumer Price Index 2.5% per year.
- Normal cost of electricity used as a proxy for the average cost of wholesale electricity displaced.
- Value of emissions abatement \$25/tonne, (\$ 2018) with the emissions intensity of electricity displaced reducing 5% per year from 0.82 tonnes/MWh in 2017-18.
- A PV degradation rate of 0.5% per year on annual generation of 47,560 MWh in 2017-18.
- Inverter replacement every ten years, assumed to cost \$0.30/W<sub>DC</sub> (\$ 2018).
- Maintenance cost of \$10/kW<sub>DC</sub> per year (\$ 2018).
- Estimated PFIT Scheme administration costs \$200,000 per year (\$ 2018).

It is estimated that the PFIT Scheme participants reduced their electricity bills by around \$21 million in 2017-18<sup>42</sup>. As previously discussed, PFIT credits to eligible entities are

<sup>42</sup> This is the total PFIT credited to eligible entities, not the total amount reimbursed to Retailers, (PFIT – NCE).

considered transfer payments between ACT electricity consumers and PFIT eligible entities and thus are not considered in this analysis, except for the value of the avoided wholesale electricity purchases.

In terms of broader benefits, the experience of Australian jurisdictions shows that premium feed-in tariff schemes help to drive consumer interest in new technologies when they are at early stages of technology uptake. Anecdotally, there is also evidence to suggest that PV system adopters develop greater awareness and control of electricity use and cost, setting them up to take advantage of other distributed energy technologies such as controllable appliances (air-conditioning, water heating etc), electric vehicles and batteries.

## 5.2 Greenhouse Gas Abatement

A variety of assumptions and methodologies can be used to estimate the quantity of greenhouse gas abatement. The PV generation supported by the PFIT Scheme displaces electricity consumption from the main-grid.

The Federal Government's, National Greenhouse Accounts Factors 2017 specifies that the greenhouse gas intensity of NSW/ACT electricity is 0.82 tonnes CO<sub>2</sub> equivalent per MWh<sup>43</sup>. This reference does not provide a greenhouse gas intensity for ACT electricity specifically or take into account the ACT's large-scale FiT contracts for difference. Use of this intensity figure gives an annual abatement of about 39,000 tonnes for 2017-18's PFIT generation of around 47,560 MWh. Reducing the 0.82 tonnes/MWh intensity figure by 5% per year, gives a total abatement of around 667,000 tonnes over the period March 2009 to 30 June 2037.

An estimate of the ACT's electricity emissions intensity was undertaken in 2015-16<sup>44</sup>. This estimated an emissions intensity of 0.732 tonnes CO<sub>2</sub> equivalent per MWh. Use of this figure, reduces the 2017-18 annual abatement. Other analysis<sup>45</sup>, estimates the emissions intensity of NSW/ACT's electricity as 0.926 tonnes CO<sub>2</sub> equivalent per MWh. Use of this figure, increases the 2017-18 annual abatement. For this review, the National Greenhouse Accounts Factors 2017 figure has been used for estimating greenhouse gas abatement in 2017-18.

In April 2016, the ACT Government set a 100% renewable electricity target by 2020. This was in recognition that offsetting electricity consumption from the main-grid with new renewable generation will make a significant contribution to reducing greenhouse gas emissions attributed to the ACT.

---

<sup>43</sup> Department of Environment and Energy, 2017, National Greenhouse Account Factors.

<sup>44</sup> Dr Hugh Saddler, 2017, Past and projected future components of electricity supply to the ACT, and resultant emissions intensity. This assessment was based on estimate of rooftop solar PV providing 2.6% of electricity consumed by residential and non-residential consumers in the ACT in 2015-16.

<sup>45</sup> Recent analysis by Dr Hugh Saddler that utilises a different methodology for private, renewable contracts and is yet to be published.

The ACT Government introduced a large-scale FiT scheme in 2011. Under this scheme, the ACT has contracted sufficient capacity from a number of wind and solar projects to offset the forecast annual electricity consumption and meet the 100% renewable electricity target by 2020<sup>46</sup>. It is expected that the renewable generation required to achieve this target will be fully commissioned by October 2019<sup>47</sup>. Thus the target is expected to be met for calendar year 2020. However, most reporting is by financial year, so confirmation may not occur until 2020-21 annual reports are published.

Annual load from the main-grid in the ACT has grown around 3 per cent over the decade to end of 2017-18. This relatively low, load growth is due to a variety of factors including the increased use of behind-the-meter PV systems and improved energy efficiency. However, what the next decade's load growth will be is difficult to accurately predict. This is due to various factors including the potential for increased use of electric vehicles, batteries and the electrification of natural gas loads, (e.g. heat pump hot water systems).

Thus, maintaining the 100% renewable electricity target beyond 2020-21 is likely to require assessment of load trends and updates to electrical load forecasts for the ACT.

The large-scale FiT is the main contributor to the ACT's progress towards the 100% renewable electricity target by 2020. It represents a significant change in the energy policy landscape since the PFIT Scheme was introduced. Post 2020, the PFIT Scheme's generators reduce the amount of offset renewable electricity needing to be purchased through the large-scale FiT.

### 5.3 Other Impacts

#### **Reduced electricity imports, local expenditure and network benefits**

The production of solar energy in the ACT reduces the amount of electricity bought from inter-state generators. Over the life of the PFIT Scheme, retailers are forecast to reduce their wholesale electricity purchases by around \$80.5 million, (\$ 2018, using the assumptions for Figure 14). This amount is included in the PFIT credited to eligible entities, thus this saving is available to be used in the local community, driving economic expenditure and employment in the ACT region.

At the time of installation, a PFIT Scheme participant incurs a capital cost and for the life of the system, ongoing maintenance costs and inverter replacements. The capital and maintenance costs incurred by PFIT Scheme eligible entities are estimated to total to \$143.1 million and \$21.3 million respectively. Around 20 to 25% of these costs are attributable to installer wages, which is typically spent locally.

---

<sup>46</sup> 2016-17 Annual Feed-In Tariff Report, December 2017.

<sup>47</sup> Hornsdale Wind Farm Stage 3 commencement month from slide 29 of this presentation: [cleanenergysolutions.org/sites/default/files/documents/2018-reverse-auction-webinar-october\\_2018.pdf](http://cleanenergysolutions.org/sites/default/files/documents/2018-reverse-auction-webinar-october_2018.pdf)

Distributed PV installations can offset network supply costs by reducing and deferring network expenditure and by reducing expected unserved energy<sup>48</sup>. An assessment for Victoria found network benefits of PV systems vary across time and location, ranging from less than \$1 per kilowatt (kW) of installed capacity to up to \$35 per kW of installed capacity. For Victoria, the total value was estimated at approximately \$3 million in 2017<sup>49</sup>. The value of distributed solar PV to the network, at distribution terminal stations, sub-transmission feeders and zone substations levels, was highest in locations where systems were connected to a portion of the network that was congested or nearing congestion. This was based on the assessed impact of the current fleet of solar PV, with specific optimisation of distributed generation likely to yield considerably higher value per kW of installed capacity.

The ACT's peak demand typically occurs between 6:30pm and 7:30pm in winter, when there is no solar PV generation. However, the summer peak demand has steadily been increasing and is expected to eventually be larger than the winter peak, due to the growth in air-conditioning and climate change. The summer peak tends to occur in January/February, in the afternoon after a multiple day heatwave. Local PV output is expected to have additional value in assisting with these summer peak loads.

Solar PV installations have also been shown to reduce spot prices in the wholesale electricity market in Australia through the merit-order effect. In 2010, it was estimated that the value of the merit order effect for 5 GW of PV could have been \$628 million, or 8.6% of the total value traded through the electricity pool in 2010. In 2009, the value of 5 GW due to the merit order effect could have been \$1.2 billion, representing over 12% of the total value traded in that year<sup>50</sup>. It is likely this effect has reduced the electricity bills of ACT consumers, although this depends on the extent that such savings are passed through.

### **Impact on property prices**

Solar PV has also been shown to add value to house prices. A survey in the United States by the Lawrence Berkeley National Laboratory of 18,871 non-PV homes and 3,951 PV homes over the period 2002 to 2013 found that PV added USD \$4.18/W to the value of a home, on average, whereas the cost to the homeowner of the PV system was USD \$4.14/W. This level of value was maintained over time as the installed costs of PV decreased significantly, and through the US housing bubble, crash and recovery<sup>51</sup>.

---

<sup>48</sup> Essential Services Commission 2017, *The Network Value of Distributed Generation: Distributed Generation Inquiry Stage 2 Final Report*, February 2017.

<sup>49</sup> Ibid.

<sup>50</sup> McConnell, D. et al., 2013, 'Retrospective modelling of the merit-order effect on wholesale electricity prices from distributed photovoltaic generation in the Australian National Electricity Market', *Energy Policy*, 58, p17-27.

<sup>51</sup> Hoen, B., Adomatis, S., Jackson, T., Graff-Zivin, J., Thayer, M., Klise, G.T. and Wiser, R., 2015, 'Selling into the Sun: Price Premium Analysis of a Multi-State Dataset of Solar Homes', Ernest Orlando Lawrence Berkeley National Laboratory.



Another US study, by the National Bureau of Economic Research, of houses in San Diego (364,992 house sales for one type of analysis and 80,182 for another) and Sacramento (90,686 house sales), found similar results, with the average home increasing in value by USD \$5.65/W, which is again greater than the average cost of the PV system in those Counties, USD \$5.24/W<sup>52</sup>. Although, similar analyses for Australia has not been located, it is expected that rooftop solar PV would also add to a home's value.

### **Employment impacts**

Solar PV installations create opportunities for electricians to increase skills and take on work in the solar sector. Between 2008 to 2017, the number of accredited solar PV technicians<sup>53</sup> increased from 11 to 66, following the growth profile of annual capacity installations of solar PV in the ACT<sup>54</sup>.

---

<sup>52</sup> Dastrup, S., Graff Zivin, J.S., Costa, D.L. and Kahn, M.E., 2011, 'Understanding the Solar Home Price Premium: Electricity Generation and "Green" Home Status', an NBER Working Paper, by the National Bureau of Economic Research.

<sup>53</sup> Clean Energy Council accredited solar installers and designers in the ACT for household and commercial systems up to 100 kW.

<sup>54</sup> Clean Energy Council 2018, Clean Energy Australia Report 2018.

## 6. Customer Impact

Table 4 outlines the number of PFIT Scheme participants and total capacity by PFIT rate. The following table summarises this information as percentages.

PFIT c/kWh	50.05	45.7	40.04	34.27	30.16
<b>Sizing eligibility (DC)</b>	<b>&lt; 10 kW</b>	<b>&lt; 30 kW</b>	<b>10 to 30 kW</b>	<b>30 to 200 kW</b>	<b>&lt; 200 kW</b>
<b>type</b>	<b>micro</b>	<b>micro</b>	<b>micro</b>	<b>medium</b>	<b>medium</b>
<b>Per cent by number</b>	23.72%	75.70%	0.05%	0.11%	0.41%
<b>Per cent by capacity</b>	14.84%	64.12%	0.45%	3.57%	17.01%

Table 7: PFIT rate by number and capacity as percentages.

By number, over 99% of PFIT eligible entities are on the 50.05 or 45.7c/kWh rate. These customers applied before 31 May 2011. A customer connecting a residential PV system in 2009-10, would have incurred an installed cost of between \$7 and \$9/W<sub>DC</sub>, resulting in a simple payback period of around a decade.

The payback period for PV systems has drastically improved since then. The total cost of installing a residential PV system in 2017 would have been about \$2.25/W<sub>DC</sub>. The discount from selling the Small-scale Technology Certificates would reduce this by around 25%. Even when net-metered, this PV system is estimated to have a simple payback period of around four to seven years, depending on daily load profile and retailer FiT.

### 6.1 Cost to ACT Households

The ACT's representative household consumption is 7,151 kWh per year<sup>55</sup>.

The additional cost from the PFIT Scheme for electricity consumed in the ACT from the grid in 2017-18 is around \$4.44/MWh.

Thus, the associated cost for residential consumers is estimated to be \$31.75 per household for 2017-18. This equates to around \$0.61 per week of additional costs due to the micro and medium PFIT Scheme.

<sup>55</sup> Australian Energy Market Commission, 2017 Residential Electricity Price Trends, December 2017.

## 7. Conclusion and Recommendations

The PFiT Scheme accelerated the uptake of PV systems in the ACT. There was also a rapid decrease in the installed costs of PV systems over the period 2009 to 2012. While this was mainly driven by falling PV module prices, it was assisted by greater install volumes and improved skills and logistics. The growth in the number of PV systems in the ACT has continued after the closure of the PFiT Scheme to new applicants.

### 7.1 Achievement of Act's Objectives

As discussed in Section 1.1, the Act was introduced in 2008-09 at a time when the contribution of renewables to electricity supply in the ACT was low with climate and energy policy frameworks in development. The objectives of the Act reflect the policy context at that point in time. The ACT's policy settings to promote renewable energy and emissions reductions have undergone significant change since then.

The large-scale FiT scheme introduced in 2011 is making a very large contribution to the PFiT Act's objectives. Despite this, the PFiT Scheme continues to make a contribution to all of the objectives of the Act.

#### **Promote the generation of electricity from renewable energy sources**

While eligibility was not restricted to PV, the PFiT Scheme only received applications for PV systems and successfully promoted generation of electricity from solar PV. The PFiT Scheme has played a role in promoting PV uptake and driving down system costs to the extent that they no longer require additional support from the ACT Government. Retailers are also now voluntarily promoting generation of electricity from residential solar PV systems via market offers for solar feed-in tariffs without the need for a legislated requirement.

#### **Reduce the ACT contribution to human-induced climate change**

Addressing climate change requires action by all in the community – government, business, community groups, households and individuals. While the impacts of individual actions are small, they still play a part in the meeting of ambitious targets for emissions reduction and carbon neutrality.

The 33.429 MW<sub>DC</sub> of PV generation supported through the PFiT Scheme reduces greenhouse gas emissions from electricity consumption in the ACT. This review estimates that the PFiT Scheme will reduce the ACT's emissions by around 667,000 tonnes over the life of the supported PV generation. From 2020, it also reduces the amount of renewable generation offsets that are required to be purchased to meet the ACT Government's 100% renewable electricity target.

#### **Diversify the ACT energy supply**

The PFiT Scheme has increased the diversity of electricity supply for the ACT. The PFiT Scheme was part of a national and international effort to promote solar at the household level, which has been highly successful in driving volume in PV system

production and deployment, reducing manufacturing and installation costs. This in turn has made PV systems more affordable and accessible, and generally increased confidence in distributed energy technologies.

### **Reduce the ACT's vulnerability to long-term price volatility in relation to fossil fuels.**

The PFiT Scheme has reduced the ACT's exposure to the cost of coal and gas used to generate electricity. In concert with the large-scale FiT scheme, it is contributing to the ACT's progress towards 100% renewable electricity by 2020.

## **7.2 Scheme Improvements**

This review of the operation of the Act has identified opportunities to improve PFiT Scheme administration and implementation. These include the need for Evoenergy to publish easy-to-understand guidance material as part of its role as the PFiT Scheme administrator and consideration of reimbursement of their PFiT Scheme administration costs.

There is also scope to further investigate the need for Evoenergy to have stronger powers to address non-compliance to requests for anti-islanding. In addition, this review suggests reviewing the methodology for setting the NCE and identifies a number of suggested process improvements to assist with PFiT Scheme reporting.

The review recommends the ACT Government:

ITP recommends that the ACT Government:

1. Require Evoenergy, as the PFiT Scheme administrator, to publish an easy-to-understand Guide to the Act to assist stakeholders understand the intent, definitions and key dates from the Act in a consistent manner. This guide should differentiate information according to the date of entering into contract for installation of the generator. It should replace the existing information made available by ActewAGL Retail and clarify the circumstances in which feed-in payments can be affected (e.g. capacity additions, component replacements, addition of battery storage devices, selling a home, demolishing a home, relocation of generators and procedures to voluntarily leave the PFiT Scheme).
2. In requesting that Evoenergy publish a Guide to the Act, advise them that information regarding PV system alterations should be prioritised. This is to ensure customers are aware of the financial implications of adding capacity to existing systems beyond the approved capacity of the connection.
3. Consider a review of the methodology for determining the NCE. In the interests of transparency, it is suggested that the methodology be published, and for consistency with other processes, that any changes to the NCE rate be on a financial year basis.

4. Consider developing a methodology for reimbursing Evoenergy's PFIT Scheme administration costs. The approach to this could be based on recent amendments to the ACT large-scale FiT to allow for administration cost recovery. The aligning of approaches could lead to potential process efficiency savings.
5. Consider commissioning analysis of the anti-islanding test data that Evoenergy collects to investigate if amendments to the *Utilities Act 2000* are required to enable Evoenergy to disconnect PV systems that are non-compliant with requests to conduct anti-islanding tests.
6. Enforce Section 4 of Disallowable Instrument (DI2015-263) to require retailers to provide the Minister with an annual report on the PFIT Scheme. EPSDD should then undertake detailed cross-checking of the key financial year parameters between the retailers' annual reports and the distributor's annual report to ensure consistency or establish reasons for differences.
7. Amend Section 5(a) of the distributor's reporting requirement in DI2015-263 to include the additional items:
  - vi) inverter rated output capacity ( $kW_{AC}$ ) and installed PV array capacity at Standard Test Conditions ( $kW_{DC}$ ) at the date of connection,
  - vii) the Annual Generation Credited (kWh), defined as the sum of the meter reads that occur during the period 1 July to 30 June,
  - viii) the number of actual meter reads for the Annual Generation Credited figure, and
  - ix) the number of estimated meter reads for the Annual Generation Credited figure.

A detailed definition and methodology for providing an indicative estimate of the actual 'electricity output during each quarter of the financial year' (or just the estimated total output for the financial year) should also be considered, e.g. a linearly prorated figure based on the proportion of days in the billing period falling in the relevant quarter/financial year.

8. Ensure all future Annual Feed-in Tariff Reports:
  - document clearly whether PV capacity figures reported are  $kW_{DC}$  or  $kW_{AC}$ ,
  - report installed PV capacity in both  $kW_{DC}$  and  $kW_{AC}$  and annual generation credited in kWh, (as opposed to MWh and MWh) in the 'Small and Medium-scale FiT Scheme performance' section, and
  - define key terms such as 'Total premium FiT paid to eligible entities' and 'Total amount reimbursed to retailers for PFIT obligations' and use these terms as opposed to 'Total FiT Paid'.

## 8. References

*Review of the Electricity Feed-in (Renewable Energy Premium) Act 2008*,  
Environment and Planning Directorate, August 2015.

*2014-15 Annual Feed-in Tariff Report*,  
ACT Government, December 2015.

*2015-16 Annual Feed-in Tariff Report*,  
ACT Government, December 2016.

*2016-17 Annual Feed-in Tariff Report*,  
ACT Government, December 2017.

*2017 Residential Electricity Price Trends*,  
Australian Energy Market Commission, 18 December 2017.

*Clean Energy Australia 2018*  
Clean Energy Council, 2018.

*'Estimating the cost of abatement'*,  
Department of Climate Change and Energy Efficiency, October 2011, available from:  
[www.aph.gov.au/Parliamentary\\_Business/Committees/House\\_of\\_Representatives\\_Committees?url=jcpaa/auditgen2\\_10/em4\\_1.pdf](http://www.aph.gov.au/Parliamentary_Business/Committees/House_of_Representatives_Committees?url=jcpaa/auditgen2_10/em4_1.pdf)

*Network Value of Distributed Generation: Distributed Generation Inquiry Stage 2 Final Report*  
Victorian Essential Services Commission, February 2017.

*Past and projected future components of electricity supply to the ACT, and resultant emissions intensity*. Dr Hugh Saddler, 2017.

*'Retrospective modelling of the merit-order effect on wholesale electricity prices from distributed photovoltaic generation in the Australian National Electricity Market'*, *Energy Policy*, 2013.

*Review of the Electricity Feed-in (Renewable Energy Premium) Act 2008*,  
Environment and Planning Directorate, August 2015.

*Selling into the Sun: Price Premium Analysis of a Multi-State Dataset of Solar Homes'*,  
Lawrence Berkeley National Laboratory, 2015.

*Solar feed-in tariffs – benchmark range 2017-18*  
Independent Pricing and Regulatory Tribunal, June 2017.

*Standing offer prices for the supply of electricity to small customers from 1 July 2017*  
Independent Competition and Regulatory Commission, June 2017

*State of the Energy Market*,  
Australian Energy Regulator, May 2017.

*'Understanding the Solar Home Price Premium: Electricity Generation and "Green" Home Status'*, Working Paper, National Bureau of Economic Research, 2011.

## **Annex A: Stakeholders**

A summary of the stakeholders who provided information for this review follows:

### **Stakeholder Meetings and Data Providers**

#### **Evoenergy**

Peter Cunningham, Manager, Regulatory Compliance and Innovation

Rob Walker, Senior Regulatory Officer

Barry Harvey, Meter Data and Billing Lead

#### **EPSDD**

James Priestley, A/Manager, Energy Policy

Emma Ereaut, Senior Policy Officer, Renewable Energy

### **Data Providers**

#### **Clean Energy Regulator**

Warren Baldsing, Inspections Team, SRES Operations

#### **Access Canberra**

Michael Mossler, Senior Manager, Electrical Inspections



## Annex B: Legislation History

The following documents the history of the Act and amendments and has been provided to assist with future reviews of the operation of the Act.

### Legislation

The *Electricity Feed-in (Renewable Energy Premium) Act 2008* (the Act) came into effect on 9 July 2008 but the PFIT Scheme commenced on 1 March 2009 after the Minister's Commencement Notice. Since commencement, there have been 13 amendments to the Act and 16 regulations and instruments to support the PFIT Scheme implementation. This section examines the history of the Act, its revisions as well as regulations and instruments. Table 5 outlines the timing of key changes to the Act.

#### B.1 The Act

The original bill (Electricity Feed-in (Renewable Energy Premium) Bill 2008, with 11 numbered pages and 14 Sections was introduced as a private member's bill in April 2008. As a private member's bill, cabinet agreement and a regulatory impact statement were not required.

Section 2 stated:

'This Act commences on the day after its notification day.'

Section 3 stated:

'The object of this Act is to promote the generation of electricity from renewable energy sources.'

The legislation was passed by the Legislative Assembly on 2 July 2008 and was notified on 9 July 2008. However, the version of the Act that was notified was 12 numbered pages, 13 Sections with A2008-21 on the cover, indicating that it was amended at some point. ITP has not been able to find a weblink for amendment A2008-21 but it appears the changes included:

- changing the start date,  
'This Act commences on a day fixed by the Minister by written notice.'
- expanding the objects of the Act,  
'The objects of this Act are to—
  - (a) promote the generation of electricity from renewable energy sources; and
  - (b) reduce the ACT contribution to human-induced climate change; and
  - (c) diversify the ACT energy supply; and
  - (d) reduce the ACT's vulnerability to long-term price volatility in relation to fossil fuels.'

- expanding the Act's coverage in Sections 6 and 7 to electricity suppliers (as well as electricity distributors),
- updating the distributor's renewable generator standards to the rules under the *National Electricity (ACT) Law* that apply to an embedded generation unit,
- introducing the concept of the normal cost of electricity, ('taken to be the franchise tariff retail price' under a price direction under the *Independent Competition and Regulatory Commission Act 1997*),
- requiring the distributor to reimburse the supplier the difference between the amount payable for the premium FiT and the normal cost of that electricity,
- allowing the distributor to pass on to the occupier any additional metering costs,
- allowing the Minister to determine the percentages for Section 8 (Payment for electricity from renewable energy generators),
- adding in the priority, 'the desirability of costs under this Act impacting equitably on all electricity users' to the list of priorities the Minister must give priority to in determining the premium FiT (Section 10),
- removing the previous Section 13 and 14 referring to additions to the *Independent Competition and Regulatory Commission Act 1997* regarding price regulation.

On 26 February 2009, the Minister for Energy made Commencement Notice CN2009-5 which specified the Act commenced on 1 March 2009.

## B.2 The Amendments

An overview of the key aspects of the published amendments and their timing follows.

### **R1 - 1 March 2009 Republication for new Act**

The Act was first republished on 1 March 2009 (13 numbered pages, 13 Sections). The difference between the Notified Act was that Section 2 Commencement was removed with the additional end notes explaining that Section 1 (Name) and Section 2 (Act commences on a day fixed by the Minister) commenced on 9 July 2008 but the remainder of the Act commenced on 1 March 2009.

### **R1 (RI) – 2 March 2009 (Reissued for retrospective amendments A2009-8) Electricity Feed-in (REP) amendment Act 2009**

Republication No. 1 (RI) moved the objects of the Act to Section 5A. It also added Section 5B to specify that the Act did not apply for renewable energy generators more than 30 kW and premises where the occupier was:

- a) a territory agency, or
- b) a territory-owned corporation, or

- c) the Commonwealth or a Commonwealth authority, or
- d) an entity determined by the Minister.

It deleted Section 6(4) regarding the normal cost of electricity is taken to be the transition franchise tariff retail price and added Section 6A, allowing the Minister to determine the normal cost of electricity in relation to a period.

It defined the PFIT in Section 8 as:

- 100% for generators installed at the premises with total capacity not more than 10 kW, and
- 80% for generators installed at the premises with total capacity more than 10 kW but not more than 30 kW.

However, while this was an improvement from incorrectly setting capacity thresholds as kWh, it did not define total capacity, so whether the thresholds were AC or DC remained open to interpretation. It also added Section 8(2) requiring payment to the occupier quarterly in arrears.

It added Section 8A to allow electricity suppliers to recover the costs of the premium FiT in a way that is in proportion to the amount of electricity used.

It also reworded Section 10(1) to require the Minister to determine the premium FiT not later than 3 months before the financial year. It also inserted the requirement to seek the advice of the ICRC before the list of priorities the Minister must give priority to in determining the premium FiT. It also added this ICRC advice to the list of things the Minister must have regard to and added the requirement to present this advice to the Legislative Assembly.

In Section 11(2), it expanded the meaning of remain connected to the network from temporary interruptions for repair and maintenance or relocation of the connection at the same premises to also include:

- If the generator is transferred with the premises to another occupier, or
- If the generator is transferred to other premises which the occupier occupies.

It also expanded the definition of premium rate to add the requirement for the occupier to make the application for premium rate payment as well as connecting the generator to the network.

## **R2 – 7 March 2011 (A2011-6) Electricity Feed-in (REP) Amendment Act 2011**

This Amendment defined capacity for PV generators as:

‘the rated power output of the panels of the generator’.

While most people would interpret this to mean the total, initial, rated DC power output of the PV modules at Standard Test Conditions<sup>56</sup>, the definition does not explicitly state this.

This Amendment added in the definitions for:

- **medium renewable energy generator**, total capacity more than 30 kW but not more than 200 kW, and
- **micro renewable energy generator**, not more than 30 kW.

It added in the requirement for renewable energy generators to be compliant which essentially required connection before the newly introduced cap of 15 MW for micro and 15 MW for medium were reached.

It also changed the key term occupier to eligible entity. It defined eligible entity as:

(a) means-

- (i) if an incorporated association owns the premises on which a compliant renewable energy generator is installed—the incorporated association; or
- (ii) if a cooperative owns the premises on which a compliant renewable energy generator is installed—the cooperative; or
- (iii) if a person owns commercial or retail premises on which a compliant renewable energy generator is installed—the person; or
- (iv) if a person (the lessee) leases premises, or a part of premises, to install or operate a compliant renewable energy generator—the lessee; or
- (v) in any other case—the occupier of premises on which a compliant renewable energy generator is installed; but

(b) does not include-

- (i) a territory agency; or
- (ii) a territory-owned corporation; or
- (iii) the Commonwealth or a Commonwealth authority; or
- (iv) an entity determined by the Minister.

It changed references from occupier to eligible entity in Sections 6, 8, 9, 10, 13 and in the Dictionary definition of premium rate.

It changed Section 8(1)(a) from not more than 10 kW to a micro renewable energy generator, (being paid the premium FiT).

---

<sup>56</sup> Standard Test Conditions for PV modules are an industry standard that specifies a cell temperature of 25°C and an irradiance of 1000 W/m<sup>2</sup> with an air mass 1.5 standard reference spectrum.

It changed Section 8(1)(b) from 10 to 30 kW system being paid 80% of the premium FiT to medium renewable energy generators being paid 75% of the premium FiT.

It removed Section 10(4) which stated 'Until the Minister determines the premium rate under this section, the premium rate is 3.88 times the transition franchise tariff retail price on the day this Act Commences.' It also removed the Dictionary definition of transition franchise tariff retail price.

### **R3 – 12 July 2011 (A2011-25) Electricity Feed-in (REP) Amendment Act 2011 (No 2)**

This revision changed the definition of complaint (in Section 5E) such that the cap for micro or medium was a combined 30 MW, or if the Minister determines another capacity under subsection (3).

It also altered Section 8(1) such that micro renewable energy generators were paid at 100% of the premium rate if they entered into a contract for installation before 1 June 2011, with those entering into a contract afterwards to be paid a 66% of the premium rate.

Similarly, for medium renewable energy generator, 75% of the premium rate was to be paid if the contract for installation was entered into before the relevant date and 66% of the premium rate if the contract for installation entered into after the relevant date.

A new Section 8(3) defined relevant date as the day *Electricity Feed-in (Renewable Energy Premium) Amendment Act 2011 (No 2)* commenced. This appears to be 12 July 2011.

It added in Section 11A requiring the Minister to report monthly:

- (a) the number of applications for the connection of renewable energy generators to an electricity distributor's network received by the distributor during the month;
- (b) the number of renewable energy generators connected to an electricity distributor's network by the distributor during the month;
- (c) the total number of renewable energy generators connected to an electricity distributor's network;
- (d) the total capacity of all micro and medium renewable energy generators connected to an electricity distributor's network.

It added in Section 11B requiring the electricity distributor to give the information above.

It also repealed *Electricity Feed-in (Renewable Energy Premium) Percentage Determination 2010 (No 1)* (DI2010-43).

### **R4 – 12 December 2011 (A2011-52) Statute Law Amendment Act 2011.**

This amendment made changes to numerous Acts.

For the Electricity Feed-in (REP) Act 2008, it moved the definition of occupier from the Dictionary to Section 5F and revises the definition to be more consistent with the terminology of the *Utilities Act 2000*:

‘occupier, of premises, means the person to whom electricity for the premises is supplied under a customer contract.’

It inserts a definition of customer contract (see the *Utilities Act 2000*, dictionary) into Section 5F as a consequence of the revision of definition of occupier.

It also inserts *National Electricity (ACT) Law* into Dictionary note 2.

### **R5 – 1 July 2012 (A2012-32) National Energy Retail Law (Consequential Amendments).**

This amendment made consequential changes to several Acts.

For the Electricity Feed-in (REP) Act 2008, it removed the definition of customer contract from Section 5F.

It replaced ‘under a customer contract’ with ‘by a NERL retailer’ in Section 5F(3) definition of occupier.

It replaced ‘electricity supplier’ with ‘NERL retailer’ in Section 6(1)(b), 6(2)(b), Section 6(3), Section 7, Section 8A(1), and Section 10.

It removed the Dictionary definition of electricity supplier and inserted the new definition:

‘NERL retailer means a person who holds a retailer authorisation under the National Energy Retail Law (ACT).

It also removed the dictionary definition of utility.

### **R6 – 20 November 2014 (A2014-48) Training and Tertiary Education Amendment Act 2014**

This amendment made consequential changes to numerous Acts.

For the Electricity Feed-in (REP) Act 2008, it changed the definition of educational institution in Section 5F.

### **R7 – 17 April 2015 (A2015-6) Dangerous Substances (Loose-fill Asbestos Eradication) Legislation Amendment Act 2015**

This amendment made consequential changes to several Acts.

For the Electricity Feed-in (REP) Act 2008, it replaced Section 11(3) and (4). This was to allow micro renewable energy generators to be taken to remain connected to the network in the case of affected residential premises that have been or are to be demolished. This was to allow eligible entities for the affected residential premises to become an eligible entity in relation to other premises provided the total capacity of the

new generator is not greater than the total capacity of the old generator when the old generator was first connected to the network.

It also defined affected residential premises, the affected residential premises register and loose-fill asbestos insulation.

### **R8 – 16 June 2015 (A2015-20) Electricity Feed-in Tariff Schemes Legislation Amendment Act 2015**

This amendment changed the Electricity Feed-in (Large-scale Renewable Energy Generation) Act 2011 and the Electricity Feed-in (REP) Act 2008.

For the Electricity Feed-in (REP) Act 2008, it inserted a new Section 5AA that referenced the Criminal Code for offences against the Act.

It expanded Section 5B(1) so that the definition of renewable energy generator:

‘does not include a device that is capable of storing energy that is not generated from a compliant renewable energy generator’.

It expanded Section 5E(1) so that the definition of compliant was such that the distributor had to receive the application for micro renewable generators by 29 July 2011 and for medium renewable energy generators by 13 July 2011 as well as requiring the generator to be installed on premises and connected to the electricity distributors network before 31 December 2016.

It revised Section 10(1) to remove the need for the Minister to determine the premium FiT not later than 3 months before each financial year.

It replaced Sections 11A and 11B removing the need for monthly reporting and making the annual reporting due within 6 months of the end of each financial year as well as expanding the definition of reporting entity to include the distributor as well as NERL retailers.

It added Section 11C to allow the Minister to require a reporting entity to undertake an audit of the information provided.

It also increased the maximum penalties for regulations under the Act in Section 12(3).

### **R9 – 5 November 2015 (A2015-42) Building (Loose-fill Asbestos Eradication) Legislation Amendment Act 2015**

This Act amended numerous Acts.

For the Electricity Feed-in (REP) Act 2008, it expanded Section 11(3)(a), (b), and (c) to add after ‘affected residential premises’ the words ‘or eligible impacted property’. It also inserted a definition of eligible impacted property, referring to *Civil Law (Sale of Residential Property) Act 2003*, Section 9(A)(1) into Section 11(4).

## **R10 – 23 February 2016 (A2016-2) Planning, Building and Environment Legislation Amendment Act 2016**

This Act amended several Acts.

For the Electricity Feed-in (REP) Act 2008, it inserted a new part 10, Section 30<sup>57</sup> which specified that the Electricity Feed-in (REP) Rate Determination 2011 (No 1) (DI2011-48) has effect, and is taken to have had effect, on and after 1 July 2011 until it is revoked for micro renewable generators that are compliant.

It also stated that, ‘any payment made by a NERL retailer under Section 6 (3) (Feed-in from renewable energy generators to electricity network) in accordance with Section 8 (Payment for electricity from renewable energy generators) using the premium rate determined under the determination is taken to be, and always have been, a valid payment.’

It added in a new Section 31 that specified that Part 10 expires on the day it commences.

This change was to correct an error in the 2011 determination of the premium rate for renewable generation. The determination refers to micro renewable energy generators and as such it mistakenly omits to cover medium renewable energy generators. The amendment had retrospective effect.

## **R11 – 25 February 2016 Republication for expiry of transitional provision (pt 10)**

Revision 11 was a republication to remove Part 10, that had been inserted in Revision 10.

## **R12 – 1 May 2017 (A2017-8) Co-operatives National Law (ACT) Act 2017**

The weblink for Amendment A2017-8 connects with the page for Amendment A2017-38 to the Cooperatives National Law (ACT) Act 2017.

This may be relevant to the Electricity Feed-in (REP) Act 2008, as it refers to co-operatives and Section 4 of the Co-operatives National Law (ACT) in the Section defining eligible entities.

## **R13 – 16 June 2017 (A2017-20) Planning, Building and Environment Legislation Amendment Act 2017 (No 2)**

This Act amended numerous Acts.

For the Electricity Feed-in (REP) Act 2008, it updated Section 5E(5) to refer to the Utilities (Technical Regulation) Act 2014 rather than the Utilities Act 2000.

It also updated the note in Section 5E(5) to read:

---

<sup>57</sup> This is despite Revision 9 of the Act having only four parts and 13 Sections. However, this approach is confirmed in Revision 10 of the Act available from: [www.legislation.act.gov.au/View/a/2008-21/20160224-62911/PDF/2008-21.PDF](http://www.legislation.act.gov.au/View/a/2008-21/20160224-62911/PDF/2008-21.PDF)



'Technical codes made under the Utilities (Technical Regulation) Act 2014 are accessible at [www.legislation.act.gov.au](http://www.legislation.act.gov.au). The service and installation rules are available at [www.actewagl.com.au](http://www.actewagl.com.au).'

## Regulations and Instruments

There are 6 regulations and instruments as well as 10 repealed regulations and instruments. These can be summarised as follows:

- one Commencement notice (28 February 2009, CN2009-05),
- seven Notifiable instruments specifying the normal cost of electricity,
- one Disallowable instrument setting the premium FiT rates by percentage,
- three Disallowable instruments setting the premium FiT rate,
- one Disallowable instrument (15 September 2015, DI2015-263) outlining the reporting requirements for NERL retailers and the distributor,
- two Disallowable instruments setting the total capacity allowed for particular rural blocks,
- one Disallowable instrument (14 February 2012, DI2012-15) setting the total capacity at 35 MW, (previously Revision 3 of the Act (12 July 2011) had set the total capacity cap at 30 MW or the determined capacity if the Minister determines another capacity under subsection (2), Section 5E(1d).

## Annex C: ActewAGL Retail Frequently Asked Questions

Information on the PFIT Scheme is available from ActewAGL Retail's website. The 'ACT Feed-in Tariff scheme (government scheme, obsolete)' part of the website has 10 points regarding the PFIT Scheme and No. 5 states:

'The feed-in tariff payable under this scheme remains attached to the generator connected in accordance with the scheme. The feed-in tariff is transferrable to the new occupant of premises with an existing scheme compliant generator, for the balance of the 20 year period. The Feed-in Act defines occupant as the person whose name appears on the electricity account for the premises. A person who moves into premises with an existing scheme compliant generator in place should contact ActewAGL for details concerning potential eligibility for the scheme.'

The 'Frequently Asked Questions – ACT Government Feed-in Tariff' part of the website has 13 questions and answers. Key questions relevant to this review include:

### **'I have generator connected under the ACT Feed-in Tariff scheme - can I increase its capacity and still receive the premium rate feed-in tariff?**

No. You will not be entitled to the premium rate feed-in tariff in relation to an increased capacity of a generator connected under the ACT Feed-in Tariff scheme.

This also applies to generators with spare inverter capacity. If you wish to generate additional renewable electricity at your property without affecting your existing ACT Government Feed-in Tariff entitlements you should add another complete system. This new system must be metered separately to your existing system. For the new system you can apply to receive payment for electricity export under any voluntary feed-in scheme offered by us at the time (currently the ActewAGL ACT Small-Generator Buyback scheme).

### **Can I replace faulty components and still remain qualified for the scheme?**

Yes. Faulty components such as inverters or solar panels for example may be replaced so long as the replacements do not increase generating capacity.

The rule of thumb here is the replacement components should be 'like for like'.

### **I have a generator connected under the ACT Feed-in Tariff scheme - what happens if I move?**

The premium rate feed-in tariff payable under this scheme remains attached to the generator that was connected under the scheme.

If you cease to be the occupier of the property where the generator is connected, your payments will cease.

**I have a generator connected under the ACT Feed-in Tariff scheme - can I relocate it to another property with it remaining eligible for the scheme?**

Yes. You can relocate a generator connected under the ACT Feed-in Tariff scheme to another property with the relocated generator remaining qualified for the scheme, subject to ongoing compliance with the requirements of the Feed-in Act.

**I've just moved into a property with a generator connected under the ACT Feed-in Tariff scheme - am I entitled to receive the premium rate feed-in tariff?**

The premium rate feed-in tariff payable under this scheme remains attached to the generator that was connected under the scheme.

The premium rate feed-in tariff is transferrable to new occupants of properties that have a generator connected under the ACT Feed-in Tariff scheme.

If you move into a property with a generator connected under the ACT Feed-in Tariff scheme you need to apply to transfer the generator contract to you.'