



An Australian Government Initiative



Powershop Australia Pty Ltd

Life Cycle Assessment

Certification: Electricity Product

Period: 1 July 2016 – 30 June 2017

1. Organisation and Emission details

Table 1: Organisation and Emission Details

Organisation name	Powershop Australia Pty Ltd	
Contact person	Haiden Jones	
Position title	Retail Compliance Co-ordinator	
Telephone number	+61 478 326 289	
Email address	haiden.jones@powershop.com.au	
Name of the subject(s) of certification	All retail electricity sales under Powershop Australia.	
Type of certification (tick all applicable)	<input checked="" type="checkbox"/> Product/service <input type="checkbox"/> Organisation <input type="checkbox"/> Event <input type="checkbox"/> Part of organisation	
Standard(s) this LCA has been prepared in accordance with	GHG Protocol: Product Life Cycle Accounting and Reporting Standard ISO 14044:2006 GHG Protocol: Corporate Value Chain (Scope 3) Accounting and Reporting Standard	
Reporting period	From: 1/07/2016	To: 30/06/2017
Total emissions in reporting year	Tonnes CO ₂ e Total Emissions: 474,485 Total Offsets: 474,902 Net Emissions: (417)	
Base year period	From: 1/07/2014	To: 30/06/2015
Total emissions in previous year	Tonnes CO ₂ e Total Emissions: 356,729 Total Offsets: 356,729 Net Emissions: (1,391)	

2. Description of Organisation Activities

In addition to Meridian Energy Australia (*MEA*) generating renewable electricity, MEA also:

- manages the wholesale electricity trading in the Australian National Electricity Market (*NEM*); and
- manages the purchasing of electricity from the NEM for Powershop's retail business so that Powershop can sell that electricity product to customers.

This Public Disclosure Summary (*PDS*) relates specifically to Powershop's electricity '*Product*' that is created by Powershop when it buys electricity from the NEM and on-sells that electricity to its retail customers under the Powershop brand. It is this Product which is accredited under the National Carbon Offset Standard (*NCOS*) Carbon Neutral Program.

Further information about Powershop can be found at www.powershop.com.au

Further information about MEA can be found at www.meridianenergy.com.au.

3. Product Description

Powershop purchases electricity from the NEM (via Meridian Finco Pty Ltd) and on-sells that electricity to its retail customers in Victoria, New South Wales and Queensland.

Powershop offsets all emissions associated with the quantity of electricity purchased for sale to its customers by the voluntary surrender of Certified Emission Reduction certificates (*CER*).

Powershop also complies with its obligation to surrender large- scale generation in relation to the Renewable Energy Targets Renewable Power Percentage.¹

4. Scope and System Boundary

Powershop retails electricity bought from the NEM and sold to end use customers. In calculating the greenhouse gas (*GHG*) emissions from electricity purchased and sold to Powershop customers, we have applied scope 2 and scope 3 emission factors to the quantity of electricity purchased from the NEM. The boundary of Powershop's carbon neutral electricity product therefore incorporates GHG emissions associated with extraction, production and transport of fuels, electricity generation, transmission and distribution to Powershop customers.

5. Functional Unit

The functional unit for this analysis is Megawatt Hour (*MWh*) of customers' electricity usage, with emissions to be expressed on the basis of tonnes of CO₂-e per MWh of usage.

Calculations of life-cycle usage for Scope 2 will be undertaken by multiplying the electricity MWh volume as per invoices from the Australian Energy Market Operator

¹ <http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target/The-certificate-market/The-renewable-power-percentage/Annual-targets>

(AEMO), net of GreenPower purchases, by the indirect (Scope 2) emission factors for consumption of purchased electricity from the grid in each state.

For indirect emissions (Scope 3), calculations of life-cycle usage will be undertaken by multiplying the electricity volume (MWh) (as per invoices from AEMO) net of GreenPower purchases and net of Powershop customer solar generation (as per Powershop system data) by the indirect Scope 3 emission factors for end users in each state.

6. Emission Calculations, Emission Factors and Methodologies

The total electricity sold is derived from invoices provided by AEMO for each state.

The instruments used to lower the gross carbon emissions from the sale of electricity are:

- voluntary surrender of GreenPower LGCs bought by customers; and
- voluntary surrender of CERs.

Each LGC is the equivalent of 1MWh of electricity; each CER represents the equivalent of 1 tonne of CO₂-e.

The emissions from the electricity purchased by Powershop and sold to customers are categorised as:

- Scope 2 emission i.e.:

Indirect GHG emissions (Scope 2): The release of greenhouse gas as a result of electricity generation, heating, cooling or steam - that is consumed by a facility;² and

- Scope 3 emissions i.e.:

Indirect GHG emissions (Scope 3): Emissions are all indirect emissions that occur as a consequence of the activities of the organisation, but occur from sources not owned or controlled by the organisation.

The tCO₂-e produced by the generation of this electricity has been calculated by:

- 1) calculating the volume (MWh) of electricity purchased by Powershop customers in each state (Victoria, Queensland and NSW) as shown on AEMO invoices. Calculate Powershop customers' voluntary GreenPower uptake using National Meter Identifier ("NMI") data. GreenPower eligible LGCs are then surrendered equal to the amount of voluntary GreenPower bought by customers; then
- 2) the total customer GreenPower uptake is then netted off the total amount of electricity sold to Powershop customers; then
- 3) Scope 2 emissions are then calculated by multiplying the remainder electricity volume (MWh) by the relevant Emission Factors for each state as shown in the National Greenhouse Accounts Factors (2016) at: Table 5 (a): Indirect (scope 2) emission factors for consumption of purchased electricity from the grid; and
- 4) to calculate Scope 3 emissions Powershop calculate the electricity solar generation from Powershop customers (data derived from Powershop's billing

² National Carbon Offset Standard-V3

- system) in each state. This solar generation volume is then netted off the remainder electricity volume. The remainder is then multiplied by the relevant Emission Factors for each state as shown in the National Greenhouse Accounts Factors (2016) at: the third bullet point that follows Table 41: Scope 2 and Scope 3 emission factors – consumption of purchased electricity by end users.³
- 5) The sum of these multiplications is the total of tonnes CO₂-e for the Powershop electricity Product; then
 - 6) CERs are surrendered to cancel out the remaining tCO₂ –e.

The National Greenhouse Accounts (“NGA”) Factors continue to be an appropriate source for emissions calculation:

- NGA is listed as an appropriate source under section 2 of the National Carbon Offset Standard.
- NGA is published by the Department of Environment, the same entity that regulates NCOS.
- The emissions analysis within the NGA covers manufacture (including of materials), electricity production, electricity distribution, electricity use and then the end of life activities associated with decommissioning, dismantling and recycling at the facility.
- The methods used to generate the default factors are consistent with international guidelines and are subject to international expert review each year.⁴

The following is a copy of the relevant sections of the tables setting out those emissions factors from the National Greenhouse Accounts Factors document.

Table 5 (a): Indirect (scope 2) emission factors for consumption of purchased electricity from the grid.

State or Territory	Emission factor kg CO ₂ -e/kWh
New South Wales and Australian Capital Territory	0.84
Victoria	1.09
Queensland	0.78
South Australia	0.53
South West Interconnected System (SWIS) in Western Australia	0.72
North Western Interconnected System (NWIS) in Western Australia	0.64
Darwin Katherine Interconnected System (DKIS) in the Northern Territory	0.56
Tasmania	0.12
Northern Territory	0.67

Sources: National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Schedule 1) and Department of the Environment.

³ The point of metering that Powershop uses to calculate its electricity products carbon footprint is at the Node (i.e. before the loss in the distribution networks) as such it is appropriate when calculating the Products Scope 3 emissions to use the same emissions factors as the distribution network.

⁴ This approach was discussed and approved by the Department of Environment on 3 August 2015.

Example: calculation of emissions from electricity consumption

A company in New South Wales consumes 100,000 kWh of purchased electricity from the grid.

Emissions of greenhouse gases (scope 2) in tonnes of CO₂-e are estimated as follows:

$$= 100,000 \times (0.84 / 1000)$$

$$= 84 \text{ tonnes.}$$

Total scope 2 GHG emissions = 84 tonnes CO₂-e

Electricity emission factors for end users

Table 41: Scope 2 and 3 emissions factors - consumption of purchased electricity by end users. Dot point three:

- Scope 3 emission factors for transmission and distribution network operators are lower as they include only emissions attributable to the extraction, production and transport of fuels and not emissions attributable to the electricity lost in transmission and distribution networks. Transmission and distribution network operators should use the scope 2 factors in the table above and the following latest estimate scope 3 factors for 2012/13: NSW and ACT: 0.03kg CO₂-e/kWh, VIC: 0.01kg CO₂-e/kWh, QLD: 0.04kg CO₂-e/kWh, SA: 0.05kg CO₂-e/kWh, WA: 0.02kg CO₂-e/kWh, TAS: 0.02kg CO₂-e/kWh, NT:0.05 kg CO₂-e/kWh.

The application of this calculation for the FY2017 is shown in the following tables; *Table 2 – Powershop net Carbon Footprint* and *Table 3 – Emissions to be offset by CERs from the Powershop Retail Electricity Product (Quantification)*.

Table 2 – Powershop net Carbon Footprint

LGC and GreenPower	2016 (July - Dec)	2017 (Jan - June)	Totals for FY2017
Electricity purchases VIC (MWh)	154,234	155,054	309,288
GreenPower Purchases VIC (MWh)	7,895	7,861	15,756
Electricity purchases NSW (MWh)	70,379	82,690	153,069
GreenPower Purchases NSW (MWh)	5,229	5,436	10,665
Electricity purchases QLD (MWh)	6	3,733	3,739
GreenPower Purchases QLD (MWh)	0	155	155
National Totals (MWh)	237,743	254,929	492,672
GreenPower LGC Liability			
GreenPower LGCs Surrendered (period)	13,367	0	
GreenPower LGC Liability Outstanding	(0)	13,452	LGCs to be surrendered in March 2018 in accordance with market practices
Electricity Purchases VIC – Net of voluntary GreenPower LGCs (MWHrs)	146,339	147,193	293,532
Electricity Purchases NSW – Net of voluntary GreenPower LGCs (MWHrs)	65,150	77,254	142,404
Electricity Purchases QLD – Net of voluntary GreenPower LGCs (MWHrs)	6	3,578	3,584
Net National Totals (MWh)	211,495	228,025	439,520

Table 3 – Emissions to be offset by CERs from the Powershop Retail Electricity Product (Quantification)

Scope	Emission source	Source of activity data	Methodology reference	Energy content factor	Emission factor	Activity data	Unit	t CO ₂ -e
2	Electricity purchased from the NEM and sold to Powershop's Victorian customers (net of GreenPower uptake)	AEMO Finalised Market Invoices	<p>NGA Factors - August 2016 Table 5: Indirect (scope 2) emission factors for consumption of purchased electricity from the grid - Victoria.</p> <p>Powershop purchased 325,044 MWh of electricity from the NEM to sell to Victorian customers.</p> <p>Powershop sold 15,757 MWh worth of accredited GreenPower to Victorian customers during the 2016-17 financial year.</p>	N/A	kg CO ₂ -e/KWh 1.09	309,287	MWh	337,123
2	Electricity purchased from the NEM and sold to Powershop's NSW customers (net of GreenPower uptake)	AEMO Finalised Market Invoices	<p>NGA Factors - August 2016 Table 5: Indirect (scope 2) emission factors for consumption of purchased electricity from the grid - NSW.</p> <p>Powershop purchased 163,734 MWh of electricity from the NEM to sell to NSW customers.</p> <p>Powershop sold 10,665 MWh worth of accredited GreenPower to NSW customers during the 2016-17 financial year.</p>	N/A	kg CO ₂ -e/KWh 0.84	153,069	MWh	128,578

2	Electricity purchased from the NEM and sold to Powershop's QLD customers (net of GreenPower uptake)	AEMO Finalised Market Invoices	<p>NGA Factors - August 2016 Table 5: Indirect (scope 2) emission factors for consumption of purchased electricity from the grid - QLD.</p> <p>Powershop purchased 3,894 MWh of electricity from the NEM to sell to QLD customers.</p> <p>Powershop sold 155 MWh worth of accredited GreenPower to NSW customers during the 2016-17 financial year.</p>	N/A	kg CO ₂ -e/KWh 0.78	3,739	MWh	2,916
3	Electricity purchased from the NEM and sold to Powershop's Victorian customers (net of GreenPower uptake and solar generated by Powershop customers)	AEMO Finalised Market Invoices and Powershop customer electricity usage data at the NMI	<p>NGA Factors - August 2016 Third bullet point in Notes that follow Table 41: Scope 2 and 3 emissions factors - consumption of purchased electricity by end users (pg. 70).</p> <p>Powershop supplied 306,585 MWh of electricity (net of solar generated electricity by customers) from the NEM to Victorian customers.</p> <p>Powershop sold 15,575 MWh worth of accredited GreenPower to Victorian customers during the 2015-16 financial year.</p>	N/A	kg CO ₂ -e/KWh 0.01	290,828	MWh	2,908

3	Electricity purchased from the NEM and sold to Powershop's NSW customers (net of GreenPower uptake and solar generated by Powershop customers)	AEMO Finalised Market Invoices and Powershop customer electricity usage data at the NMI	<p>NGA Factors - August 2016 Third bullet point in Notes that follow Table 41: Scope 2 and 3 emissions factors - consumption of purchased electricity by end users (pg. 70).</p> <p>Powershop supplied 152,020 MWh of electricity (net of solar generated electricity by customers) from the NEM to sell customers.</p> <p>Powershop sold 10,665 MWh worth of accredited GreenPower NSW customers during the 2015-16 financial year.</p>	N/A	kg CO ₂ -e/KWh 0.02	141,355	MWh	2,827
3	Electricity purchased from the NEM and sold to Powershop's QLD customers (net of GreenPower uptake and solar generated by Powershop customers)	AEMO Finalised Market Invoices and Powershop customer electricity usage data at the NMI	<p>NGA Factors - August 2016 Third bullet point in Notes that follow Table 41: Scope 2 and 3 emissions factors - consumption of purchased electricity by end users (pg. 70).</p> <p>Powershop supplied 3,469 MWh of electricity (net of solar generated electricity by customers) from the NEM to sell customers.</p> <p>Powershop sold 155 MWh worth of accredited GreenPower QLD customers during the 2015-16 financial year.</p>	N/A	kg CO ₂ -e/KWh 0.04	3,314	MWh	133
Total Footprint								474,485

7. Assumptions/ Limitations

Table 4: Assumptions/ Limitations

Emission source/ activity	Assumption/ limitation and justification
LGC surrender	LGC liabilities (surrender) for both mandatory requirements and GreenPower for the period 01/01/2017 – 30/06/2017 have been taken as completed however in line with common market practices, these surrenders will only occur in 2018 and it is only at that time that actual serial numbers of certificates will be available. The Public Disclosure Summary (<i>PDS</i>) that describes this 'Product' will be regularly updated, on a rolling basis, in subsequent iterations of the PDS.
Other limitations on Corporate emissions	As identified in Meridian Energy Australia Corporate Greenhouse Gas Inventory.

8. Emissions Exclusions from Within the System Boundary

Table 5: Exclusions

Emission source	Scope	Justification for exclusion & overall implications for footprint
Operations of Meridian Energy Australia and its Subsidiary Powershop	Scope 3	All scope 2 & 3 emissions associated with the back office support of this product have been excluded as they have been separately accounted for within the GHG Inventory prepared for the Meridian Energy Australia Corporate Group.

9. GreenPower, GreenPower Eligible LGCs and CERs

As per section 6 Emission Calculations, Emission Factors and Methodologies, Powershop Australia surrendered mandatory LGCs, GreenPower LGCs and CERs to ensure its retail electricity was carbon neutral for the FY2016-17 period under the NCOS Standard. The details of those instruments surrendered are set out in the following tables.

Table 6: GreenPower LGCs pertaining to Powershop Retail Electricity Product (Quantification)

Type	Volume	Unit	tCO ₂ -e	Status
GreenPower Compliance	13,367	MWh	12,298	Surrendered Part of surrender June 2017: WD00VC17 388,585-399,845 (1,973) WD00SA06 2,743 – 14,136 (11,394)
GreenPower Compliance	13,452	MWh	12,241	Purchased To be surrendered in 2018

Type 7: CERs Voluntarily Surrendered for Powershop 'Product'

Details of CERs voluntarily Surrendered		
Quantity	Serial number	Date of surrender
61,116	9,439,822 - 9,500,937	August 2017
66,438	9,372,137 - 9,438,574	August 2017
4,280	5,213,980 - 5,218,259	August 2017
13,387	1,681,547 - 1,694,933	August 2017
26,754	1,654,793 - 1,681,546	August 2017
14,098	4,873,256 - 4,887,353	August 2017
152,300	4,376,179 - 4,528,478	August 2017
5,510	933,241 - 938,750	August 2017
3,275	920,859 - 924,133	August 2017
9,212	4,282,590 - 4,291,801	August 2017
5,978	52,908,704 - 52,914,682	August 2017
30,005	74,759,430 - 74,789,435	August 2017
77,549	1,553,648 - 1,631,197	August 2017
5,000	9,862,489 – 9,867,488	February 2018

Table 8: CER Surplus

Details of CER surplus		
Quantity	Serial numbers	Date of surrender
417	9,867,071 - 9,867,488	FY17 surplus

Table 9: Powershop Carbon Offset Summary – Product

Carbon Neutral Summary FY2016-17			
Emissions	MWh	tCO₂-e	Total tCO₂-e
Scope 2	466,095	468,617	
Scope 3	435,497	5,868	
GreenPower purchases	26,576		
Emissions total			474,485
CERs		474,902	
Offsets total			474,902
tCO ₂ -e (Cr)/ Db			(417)

10. Purchase of Carbon Neutral Products

The purchase of Carbon Neutral products will be reported on a Meridian Energy Australia group level as part of Meridian Energy Australia's organisation accreditation.

11. Emissions per Functional unit

For the FY2017 emissions per MWh:

Scope 2 & 3: $474,485 \text{ tCO}_2\text{-e} / 901,592 \text{ MWh} = 0.52 \text{ tCO}_2\text{-e/MWh}$

12. Assessment of Uncertainty

Section 6 provides an overview of how data has been collected to verify the total amount of electricity purchased and on-sold to Powershop's retail customers (scope 2). This data is sourced from AEMO invoices which undergo a range of true-up iterations and are audited to ensure reliance.

The extrapolation of the AEMO data into a format that is applicable to this carbon reporting format is transparent and no uncertainty exists.

The data for Scope 3 emissions is calculated using customer usage data at the NMI based on average or verified reads less solar electricity generation from Powershop customers. Where verified reads are not available, there is an estimation algorithm in the Powershop system to estimate the electricity volume for the portion of the period where actual data was not available at the time.

The Powershop system data that is applicable to this carbon reporting format is transparent and no uncertainty exists.

The calculation to convert those amounts of energy purchased into the emissions liability for the Product is simple and non-complex so again, there is no uncertainty.

There are no incremental Scope 1 emissions; hence the uncertainty around emissions is contained within the MEA Corporate Greenhouse Gas Inventory.

13. Base Year Recalculation Policy

In the 2016-17 financial year there has been no change in:

- operational boundaries;
- ownership and control of greenhouse gas sources and sinks; and
- quantification methodologies that result in significant changes to GHG emissions or removals.

On this basis, no base year recalculation has taken place.