VCMA Discussion Paper
25 November 2009

GreenPower treatment for carbon footprint calculations
- Post release of NCOS and amendments to CPRS

On the 24th November 2009 the federal government released its long awaited National Carbon Offset Standard (NCOS). Significantly the NCOS provides no guidance on how GreenPower should be treated as part of a carbon inventory or offsetting strategy. This is not surprising as the NCOS appears to draw heavily on international standards for much of its methodology where no highly developed voluntary GreenPower programs exist overseas.

GreenPower's exclusion from NCOS is significant given that on the same day the NCOS was released, the Federal Government also announced amendments to the Carbon Pollution Reduction Scheme (CPRS), negotiated with the Coalition. As part of these amendments, the Government announced that the full value of GreenPower would be allowed to count as an abatement activity through future reductions in the national CPRS cap. Previously the government had maintained that only purchases which exceeded a 2009 based threshold would be counted towards this reduction. The threshold effectively made it impossible to consider GreenPower as an abatement activity for accounting purposes as the quantum of abatement would not be known until almost eighteen months after the purchase was made.

Now that the government has made this concession, it again becomes possible to calculate the comparative abatement value of GreenPower for the purposes of carbon footprinting and statements of carbon neutrality

It must be noted here that the government's decision to allow voluntary GreenPower purchases to count as additional abatement over and above the national cap possibly puts Australia at the forefront in attempting to create a rational and workable relationship between compliance and voluntary systems. As such it is to be applauded. And although it is disappointing that GreenPower had been ignored in the NCOS perhaps it provides an opportunity for industry to now assume the lead in refining some of the more conceptually challenging ideas. The VCMA has therefore issued this discussion paper as a way of informing VCMA members and other stakeholders of the issues and help develop an acceptable and standardised treatment for GreenPower as part of a Carbon Footprint. In this regard any approach developed needs to be credible, robust, transparent and needs to be understandable and accepted by consumers.

The Need to Define GreenPower™

Like any other form of accounting, one does not create a carbon footprint simply to calculate a figure for its own sake, but to use the process for decision making. The decision to measure and reduce emissions may be made for various reasons, the intrinsic value one places on the environment or in the case of a company, to indicate to a concerned public that its products and services have a lower environmental impact.

While the reason for measuring may vary, in the end it is important that any carbon foot-printing methodology provides an accurate assessment of the real impact of an entity's effect upon the environment.

A number of issues have arisen since the ratification by Australia of the Kyoto protocol and the proposed introduction of the Carbon Pollution Reduction Scheme along with changes to the Renewable Energy Target, so that the calculation of the contribution of GreenPower to a Carbon Footprint has become unclear. Some members of the Carbon Accounting fraternity are refusing

to sign off on carbon footprints which use GreenPower as a source of abatement. Others are recognising the abatement but adding significant qualifying statements as to its potential environmental effect.

In July 2009, the GreenPower Program Manager after consultation with the Australian Competition and Consumer Commission released a directive to GreenPower providers regarding environmental claims which could be made. The directive essentially required removal of references which suggested that the purchase of GreenPower resulted in any environmental outcome. (See App.1)

The most recent CPRS amendments appear to have removed one of the major hurdles but there are other uncertainties surrounding GreenPower which need to be resolved. The VCMA would like to hear from parties with an interest in GreenPower and its use as an abatement within a carbon accounting process and emissions reduction strategy.

Responses to this paper are requested by 4 December 2009 and should be forwarded to the VCMA Secretariat info@vcma.org.au.

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Current Methodologies

While some carbon footprint calculation can be large and complex, for the purpose of this paper a simple example of how a carbon footprint is created is shown below.

Example 1. Basic Carbon Footprint Calculation where "Source" indicates the type of fuel consumed, "Amount" indicates the amount of fuel used over the relevant period usually one year, "NGA factor" indicates the officially published GHG intensity of each unit of fuel and Net Emissions equals Gross Emissions minus any offsets purchased.

Source	**Amount**		**NGA factor**	**Emissions tCO2-e**
Gas	10,000Mj	x	.0052	= 52
Petrol	4000 litres	x	.0025	= 10
Electricity	100MWh	x	0.90	= 90
Gross Emissions				**152 tCO2-e**
Offsets [1]	62 tCO2-e (CERs)			= - 62
Net Emissions (Carbon Footprint)				= **90 tCO2-e**

GreenPower as Abatement: - Fuel Switch or Offset

The substantive argument concerning the accounting for GreenPower relates to how GreenPower should be viewed in its role as an abatement activity. While some would argue that GreenPower is more appropriately viewed as a form of fuel switching similar to putting solar panels on one's own roof, others prefer to treat it as an offset. Until recently this argument was somewhat academic as either treatment resulted in the same bottom line figure. But this is no longer the case. Implementation of the proposed CPRS and the newly instigated RET have changed the relationship between GreenPower and environmental outcomes. Therefore it is critical that we understand the implications of choosing a particular method of accounting treatment if we are to be able to use carbon foot-printing as a decision making tool.

GreenPower as a Fuel Switch

A predominant view of GreenPower adopted by many in the energy and renewable energy sectors conceptualises GreenPower as a form of fuel switching. This arose partly because the concept of offsetting was a difficult one for many customers to understand and the idea of physically drawing power from a black generator or a green generator was much more tangible. Because electricity once supplied to the grid cannot be differentiated by source i.e. there is no physical way to determine where that electricity has come from, the only acceptable way to claim that you have purchased electricity

[1] The offsets used in this example indicate CER units which each represent a guaranteed aggregate abatement of 1 tCO2-e through the Kyoto mechanism.

from a particular generator is by the trail of financial payments between the generator and the customer. In other words it has been accepted that one can claim to have sourced electricity from a particular generator if one had paid the generator for that electricity.

The payments in this case consist of a contribution to the standard (black) component of the national electricity pool made through a customer's retailer, which all generators receive, and then another payment for a Renewable Energy Certificate (REC) from a specific GreenPower accredited generator.

This legitimacy of the fuel switch concept is reinforced through current guidance provided by the Essential Services Commission (Vic) *Electricity Industry Guideline No. 13 Greenhouse Gas Disclosure on Electricity Customers' Bills.*

It should be noted however that this guideline was first published in 2002, and pre-existed Australia's ratification of the Kyoto Protocol. As such it is now arguably problematic and in need of review.

*"**disclosable emissions** ... means the number of tonnes (of GHG) calculated by applying the formula: **(NGA) co-efficient** x (MWh of electricity – MWh of **green power)** "*

The fuel switch concept uses the following method for calculating a carbon footprint, where in line with the ESC guidance, the published NGA co-efficient is reduced in proportion to the amount of GreenPower purchased. I.e. purchasing 50% GreenPower would reduce the NGA factor by 50%.

Example 2. Fuel Switch method for GreenPower accounting.

Source	**Amount**	**NGA Co-efficient Emissions Intensity**	**Emissions tCO2-e**
Gas	10,000Mj	.0052	52
Petrol	4000 litres	.0025	10
Electricity (50% GreenPower)	100MWh	.45	45
Gross Emissions			**107 tCO2-e**
Offsets acquitted	CERs x 62		- 62
Net Emissions (Carbon Footprint)			**45 tCO2-e**

The above example of a carbon footprint using 50% GreenPower reduces the NGA factor for electricity from **0.90** tCO2-e per MWh to **0.45** tCO2-e per MWh. The 50% GreenPower is achieved by the GreenPower provider purchasing and surrendering 50 RECs (50MWh) in relation to the customers 100MWh consumption.

GreenPower as a form of Offset

The alternative view of GreenPower maintains that the purchase of GreenPower entails nothing more than the acquisition and surrender of a Renewable Energy Certificate (REC) where the REC simply represents the environmental attribute of a MWh of electricity. This action is fundamentally the same as the purchase of a carbon offset created by a renewable generator. The only significant difference being that the REC is denominated in MWh whilst a carbon offset from a renewable generator goes through a conversion process to establish its value in *additional* CO2 equivalents abated.
If it is to be used as an offset then it is worth considering whether 1 MWh of GreenPower should have an absolute CO2 value, based on where it is generated (as with a conventional offset), or a relative CO2 value based on where it is used. Furthermore, if GreenPower is restricted to the offsetting of national grid electricity usage only, then does this matter?

Example 3. Offset method for GreenPower accounting.

This method does not alter the NGA co-efficient for calculating gross grid electricity emissions but uses GreenPower as an adjustment to the bottom line in the same way as an offset but using the same NGA factor . Note that traditionally the offset value for GreenPower assumes a pre Kyoto-CPRS / pre RET scenario and is not discounted. In such a case the carbon footprint under fuel switch and offset methodologies would still be equal.

Source	**Amount**	**NGA Co-efficient Emissions Intensity**	**Emissions tCO2-e**
Gas	10,000Mj	.0052	52
Petrol	4000 litres	.0025	10
Electricity	100MWh	0.90	90
Gross Emissions			**152 tCO2-e**
Offsets	CERs x 62		- 62
	GreenPower 50 MWh	0.90*	- 45
Net Emissions (Carbon Footprint)			**45 tCO2-e**

*** As with example 2 through purchase and surrender of 50 RECs by the GreenPower provider, and assuming 1 REC=0.9 tCO2e at the point of consumption.**

Pros and Cons

Proponents of the Fuel Switch view argue that purchasing GreenPower is equal to reducing your emissions at the source. It is similar to installing solar panels except that

you are paying someone else to do so your behalf. Therefore it will reduce gross emissions the same way that installing solar panels will.

Further, fuel switch advocates argue that there is no correct procedure for converting the MWh value of a REC to a meaningful and consistent CO2 offset value. If a GreenPower REC can be used as an offset for electricity abatement then logically it should also be valid for offsetting other forms of emissions. RECs however do no have to comply with the many tests applied to offsets.

Detractors of the Fuel Switch view argue that the concept ignores a number of important characteristics of the GreenPower transaction, such as the fact that RECs are bankable and infinitely tradable where electricity for practical purposes is not, a GreenPower purchase can occur retrospectively while fuel switching cannot, fuel switching represents a physical action whilst GreenPower is only a financial transaction. These however are also characteristics of offsets.

Whilst such differences may be considered esoteric, for practical purposes GreenPower and offsets do share one important characteristic. Both exist side by side in the market place and compete for the same consumer dollar. Proponents of the offset view argue that unless both are treated the same way for accounting purposes it becomes impossible for the consumer to measure their comparative effectiveness. As such the consumer will find it difficult to establish where his/ her dollar is better spent. Given that the purpose of an emissions trading scheme is to get the greatest abatement for the lowest economic cost, this consideration is critical.

GreenPower under a Cap and Trade Scheme.

The importance of choosing the correct accounting treatment becomes apparent under a local cap and trade scheme such as the proposed CPRS.

Under a capped scheme, actions taken to reduce GHG emissions at an individual level do not translate to a reduction at the national or global level [2]. This is because a cap and trade scheme will always compensate for a reduction in one area by allowing an increase in another so that the national cap always remains at predetermined value in a given year.

Because a GreenPower purchase occurs within the covered sector of the proposed CPRS it will not translate into an overall abatement at the global level. GreenPower purchases will over time have the effect of freeing up permits which can then be used by others to increase their emissions. Offsets on the other hand must result in an aggregate emissions reduction in order to become verified as offsets.

The Government has recently made a number of concessions to the GreenPower industry that allow GreenPower purchases to have an aggregate effect. Unfortunately, this effect is still difficult to quantify because of a number of issues which result from the vagaries of the concessions themselves along with recent changes to the national Renewable Energy Target. The four main issues are explained below.

[2] Although arguably as they help the country to achieve its cap more cheaply the government may be inclined to make more ambitious cuts in the future.

Issues for establishing the aggregate abatement value of GreenPower

1. Will GreenPower reduce aggregate emissions? - the 2009 Baseline.

In May 2009 the government agreed that GreenPower purchases may be recognised through a reduction in the national GHG emissions cap but only for that proportion of national sales which exceed those of 2009. How this would translate to an abatement value for an individual is uncertain because the extent to which the relevant year's total purchases exceed or fall below 2009 cannot be ascertained at the time of purchase or at the time of calculating the footprint. National GreenPower sales are not published until mid way through the following year. On the 24 November 2009 the government in its proposed CPRS changes announced that it would *"Recognise all emissions savings from the use of GreenPower in determining the cap. "* The VCMA interprets this as meaning that the 2009 baseline is to be removed. The issue has been included here for consideration only. Hopefully it will only be of historical interest.

2. The 5-7 year Delay

Recognised GreenPower purchases regardless of baseline will not take effect until 5 – 7 years into the future when the Minister may take the GreenPower sales into consideration when adjusting the cap. This delay requires that the ***present value*** of the future abatement must be considered and discounted at an appropriate rate. The value of future abatement cannot be the same as immediate abatement otherwise no-one would pay for abatement now, but would invest the available funds in order to leverage the amount of abatement these funds would deliver in the future.

3. Uncertainty re: "Adjusting the Cap".

The uncertainty surrounding the extent that the Minister will actually take GreenPower sales into account, and by what method this "adjustment" will occur adds further uncertainty to the value of GreenPower when compared to offsets which are deemed to have already delivered real additional abatement.

4. The REC Multiplier.

Small Generation Units (SGUs) are given 5 RECs for each 1 MWh generated, diluting the value of RECs as a proportion of the overall national energy supply. 4 of these 5 RECs actually involve no renewable electricity generation, but may be used to meet energy retailer's Renewable Energy Target (RET) liabilities. As GreenPower shares RECs as a common currency with other RET liable parties, and derives these RECs from a common pool where substitutability of GreenPower and non GreenPower RECs is almost entirely unrestricted, then the effect of the REC multiplier is to devalue the GreenPower currency[3]. The extent of this devaluation is estimated to be in the order of 15% over the next few years, meaning that 1 REC will equate to 0.85MWh of renewable energy in the national energy pool. For example, 18% of all RECs are

[3] While it is noted that SGU RECs are excluded from the GreenPower scheme, GreenPower gets its abatement value by creating scarcity for RECs in the total national market, most of which is driven by the compliance scheme where SGU RECs are not excluded. Therefore RECs excluded from the GreenPower market will simply backfill the compliance market. The exclusion therefore has no effect on total scarcity or the devaluing effect of the multiplier.

expected to be 'phantom' RECs, in 2010/11. Therefore 1.18 RECs will be created for every 1 MWh of renewable energy created. So each REC would actually be equivalent to 1/1.18=0.85 MWh of 'real' renewable electricity.

Significantly however, depending on how the government itself calculates GreenPower purchases in its adjustment of the cap (or retirement of permits) the REC multiplier may become irrelevant for accounting purposes. This is because the value that the government places on GreenPower as an abatement and the resulting tCO2-e reduction in the cap per MWh of GreenPower sold, may arguably be the only relevant determinant of the abatement value of the GreenPower purchase. If this is the case, then the government needs to clearly explain how it intends to value GreenPower when adjusting the cap .

Making the Decision

Whether GreenPower is seen as a Fuel Switch or an Offset now becomes significant in light of the discretion that the government has in the timing and value that it applies to GreenPower purchases.

If it is seen as a fuel switch, it will receive the same treatment regardless of the effect of national cap or the changes to the RET. It will be treated as if it was a real reduction in grid electricity at the point of use. If it is treated as an offset it will need to be factored for its effect on aggregate emissions the same way any other offset is.

Options

This paper presents four potential ways in which GreenPower could be treated and each of these is discussed below:

Option 1 - Treat GreenPower as fuel switch and ignore implication of the cap and trade scheme, ratification of the Kyoto Protocol, and the REC multiplier. This will mean that by purchasing 100% GreenPower, emissions from electricity will nominally become zero. If this approach is adopted then what if any disclosure should be made to the consumer regarding the aggregate impact of their decision on Australia's greenhouse gas emissions?

Option 2 - Treat as fuel switch as per option 1 but with a qualifying statement as to GreenPower's aggregate effect (or lack thereof) under a national cap. This may mean the footprint is ineligible for claims of carbon neutrality

> eg. **"Qualification regarding GreenPower**. The use of GreenPower as an abatement is included here for the purpose of creating an **entity based** emissions statement only. At the time of writing the effect of GreenPower on reducing global emissions is uncertain. Therefore net emissions indicated here may not reflect the absolute impact of this organisation's operations upon the environment and no statement regarding carbon neutrality is made"

Option -3 Disallow GreenPower as a form of abatement within a carbon footprint but allow qualifying statement which indicates that GreenPower has been purchased for electricity usage in order to assist the growth of the renewable energy sector. This is a similar approach to that being considered under the National Greenhouse and Energy Reporting Scheme (NGERS)

Option 4 - Treat as a grid electricity specific offset with appropriate discount of abatement value to reflect the effect of the CPRS and REC Multiplier. (see example below) Under this approach we would need to determine the appropriate discount factors

Development of discount factors to go into calculating abatement value of GreenPower for option 4.

REC Multiplier – SGU RECs subject to the REC multiplier will be produced up until 2014/15 initially they are expected to account for up to 18% of future REC supply. This will dilute the MWh value of RECs in the national renewable energy supply by 15%.
= 15% discount

5-7 year delay – A company's money spent now on GreenPower could be invested and used to buy offsets with immediate effect in say 5 to 7 years. What should be the appropriate discount rate and over what time frame should this be applied?

As a minimum the real interest rate should be used and discounted for at least 5 years. The comparative present value of GreenPower should therefore be discounted at say 3% X 5 years using present value method. **= 14% discount**

Uncertainty surrounding adjustment of the cap – What if any discount should be applied for the uncertainty regarding the Minister actually adjusting the cap for GreenPower ? We can assume that the risk is pretty small and for the purpose of this example we have assumed that it is 10% - for illustrative purposes. **= 10 % discount**

When compounded these discounts reduce a nominal 1.00 tCO2-e abatement from GreenPower to approx. 0.66 tCO2-e. [(1-0.15)x(1-0.14)x(1-0.10) = 0..658]
In the example below the discount is applied to the NGA factor of 0.90 tCO2-e/MWh. (0.90 x 0.66 = 0..59)

Example 4. Discounted Offset Method for GreenPower accounting.

Uses standard NGA Co-efficient for Grid Electricity then add GreenPower as offset.

Source	**Amount**	**NGA Co-efficient Emissions Intensity**	**Emissions tCO2-e**
Gas	10,000Mj	.0052	52.0
Petrol	4000 litres	.0025	10.0
Electricity	100MWh	0.90	90.0
Gross Emissions			**152.0 tCO2-e**
Offsets	CERs x 62		- 62.0
	GreenPower 50 MWh	*0.59	- 29.5*
Net Emissions (Carbon Footprint)			**60.5 tCO2-e**

* 50MWh x 0.59 (discounted NGA Factor) = 29.5 tCO2-e total offset value.

Adjustment for Baseline (2009 or other)

Whilst the baseline idea appears to have now been dropped, the problematic nature of any baseline, when used for the purpose of calculating "additional" abatement should not be ignored in any discussion paper on this subject.

We will not know the level of GreenPower sales for any given year until well into the following year so there will be a time lag in accurately determining the discount factor that should be applied to purchases in any given year if it is to be applied against a baseline. How then should we determine the discount factor to apply?

As an example: we could assume a future increase in sales of GreenPower over and above 2009 sales. – If the national increase is 100% then GreenPower abatement value will be 50% of what it would have been if there was no 2009 baseline. That is, averaged over the full amount of GreenPower sold (200% of 2009 baseline) total abatement will be due to only 100 units sold (200-100), so average abatement per unit of GreenPower sold is 100 (sales above 2009 level)/200 (total sales).= **50% discount**

Note: an alternative to this calculation is described below which would place the responsibility for the 2009 baseline upon only those who actually purchased GreenPower in 2009.

Alternative treatment for Option 4 - 2009 Baseline adjustment

An alternative to option 4 has been proposed which makes the responsibility for the 2009 baseline a matter only for those who have purchased GreenPower in 2009. In this scenario those who had purchased in 2009 would treat their 2009 purchase as a liability,

as they contributed to the baseline with their purchase. The amount they purchased in 2009 would then need to be exceeded in order to receive any reduction in emissions. This would also mean that if they did purchase in 2009 but did not purchase in 2010 then their nominal 2010 emissions would increase to the extent of the 2009 purchase. Those who did not purchase GreenPower in 2009 would therefore have no need to apply a discount for the baseline as they did not contribute to it.

This option has numerous advantages with regards certainty of calculation as there would be no need to wait until the following year to ascertain the quantum of discount to be applied as a result of the baseline. It does however create difficulties for verifiers in trying to establish the amount of GreenPower purchased by any entity in 2009 where, due to the liability created, there is a disincentive on the part of the subject entity to make such disclosure.

This alternative has been included for discussion purposes however the disclosure problem, issues of perceived fairness (or lack therefore) and the large disincentive to continue with emissions tracking and disclosure this might create for some organisations, are assumed to make this option impractical.

Issue of GreenPower "double-counting"

A final issue and one which is often raised concerns the potential double counting of GreenPower in assessing a carbon footprint. This argument holds that the NGA factor itself is erroneous as it already includes the contribution made by GreenPower in reducing the emissions intensity of the national grid. Therefore all users of grid electricity when calculating their emissions from grid electricity, get the benefit of GreenPower which has been paid for by others. Likewise GreenPower purchases are assumed to be double counting as they are receiving an emissions reduction from their own GreenPower purchase as well as a common reduction through the already lower emissions factor.

It is difficult to see that this is an issue for verifiers of carbon footprints when considering the value of GreenPower. Any error in the NGA factor will count both ways for the purchaser by both decreasing emissions in the gross figure then increasing them by the same factor (by decreasing the NGA factor used for adjustment) in the net figure.

In any case the actually quantum of the error is likely to be smaller than the rounding error applicable to the published NGA factors themselves. It is therefore perhaps a matter for the department of Climate Change to consider. The issue is raised here only for the purposes of completeness of discussion.

Appendix 1

Directive to GreenPower Providers from GreenPower Program Manager
July 2009.

To all concerned,

As a result of recent consultation with the ACCC GreenPower has made several amendments to the language used around emissions reductions. All marketing material used by GreenPower providers must be consistent with the amended messaging:

1. GreenPower. A simple switch for you, *significant results for our environment*.

Has been replaced with:

GreenPower. A simple switch for you, *renewable energy for our future*.

2. Taking conscious steps to reduce your business' energy usage will not *only further benefit the environment*; it will also help you to offset the cost of supporting GreenPower.

Has been replaced with:

Taking conscious steps to reduce your energy usage will help offset the cost of supporting GreenPower.

3. GreenPower. You have the power to *make a real difference*.

Has been replaced with:

GreenPower. You have the power to *choose.*

Please be reminded that all marketing material must be approved by GreenPower as an audit requirement of the program.

Thanks for your cooperation.

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