
Tax Accounting for the Renewable Energy (Electricity) Act 2000: A Tax by Any Other Name Would Smell as Sweet

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Australia has committed to reducing greenhouse gas emissions, and part of that commitment is the enactment of the Renewable Energy (Electricity) Act 2000 (Cth) (the REE Act). This article focuses on the Australian Renewable Energy Target and how the REE Act impacts on the electrical generation industry to dilute greenhouse gas emissions. The research examines the market of trading “carbon credits” produced under the provisions of the REE Act, which are known as Renewable Energy Credits (RECs), and views this as a taxation and subsidisation system. It aims to develop a clear understanding of the operations of the REE Act: how the REC system interacts with Australia’s two other main taxes – Income Tax and Goods and Services Tax; and how the trade in RECs may be treated in the accounts of the respective trading entities – the liable parties and the renewable energy electricity generators.

I. INTRODUCTION

The purpose of this article is to outline the functions of Australia’s current carbon tax legislation – the *Renewable Energy (Electricity) Act 2000* (Cth) (the *REE Act*). It provides background and context as to why the legislation was enacted, how it operates, and how it interacts with Australia’s two major taxes (income tax and the consumption-based goods and services tax (GST)).

The research supporting this article is a case study of the operations of the Solex Carnarvon Solar Farm project, which has been in operation since 25 August 2005. The Solex project is a renewable energy generator accredited by the Clean Energy Regulator, and is registered to create and trade renewable energy credits (RECs) under the *REE Act*. In addition to selling RECs created from its own generation of renewable energy, Solex creates, purchases, and sells RECs on behalf of others as an accredited agent.

This article reveals how the provisions of the *REE Act* impact on the sustainable development framework, known as the triple bottom line (TBL). The aim of the *REE Act* is to reduce greenhouse gas emissions¹ caused by the combustion of fossil fuel for energy generation. The article treats the provisions of the *REE Act* as a carbon tax and trading regime. The compulsory purchase and surrender of RECs by the fossil fuel-based electricity generators – the liable parties or taxpayers – is considered to be “a compulsory monetary contribution demanded by a government” and therefore, by definition, a tax.²

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¹ There are a number of greenhouse gases but the most significant greenhouse gas is carbon dioxide (CO₂).

² C Yallop et al (eds), *Macquarie Concise Dictionary* (Macquarie University, 4th ed, 2006) 1255. In *Bartlett v Federal Commissioner of Taxation* (2003) 54 ATR 261; [2003] FCA 1125 the Federal court considered tax to take the definition in *Income Tax Assessment Act 1997* (Cth) s 995-1 which states: “**tax** means: (a) income tax imposed by the *Income Tax Act 1986*, as assessed under this Act; or (b) income tax imposed as such by any other Act, as assessed under this Act.” In simple terms the legislative definition of a tax means a tax, which is not overly helpful. This paper therefore prefers the *Macquarie Dictionary* definition which is very similar to that of Peter Butt et al in P Butt et al (eds), *Butterworth’s Concise Australian Legal Dictionary* (Reed International Books Aust, 3rd ed, 2004) 423. It should be noted that the *Butterworth’s* definition refers to *Matthews v Chicory Marketing Board (Vic)* (1938) 60 CLR 263 for support.



Accordingly, the fiscal benefit of the receipt of funds from the creation and sale of RECs, by “an accredited power station”, is considered to be “a grant by a government to a company, organisation, or individual, for which it receives nothing in return” – and therefore, by definition, a subsidy.³

The article demonstrates how the Australian carbon trading system acts as a taxation and subsidisation system for which the controlling administrator is the Australian Government through the office of the Clean Energy Regulator.

As an indirect taxation system impacting upon most generators of electricity in Australia (and, subsequently, the broader Australian population as electricity consumers connected to main supply networks), it is surprising that such a significant financial impost appears to be little understood by, and generally unknown to, Australian society.

Furthermore, the lead author’s experience, acquired from having been engaged in renewable energy generation since 2005, is that little is known of the provisions of the *REE Act* within the accounting and taxation professions. Involvement in, and exposure to, the renewable energy industry, and the relationship of this industry with the fossil fuel energy generators, has provided an insight into potential accounting conundrums and taxation treatments for income and goods and service tax compliance processes.

This article seeks to fill the gap in that professional and academic knowledge, and to inform the broader academic community of how tax is levied on fossil fuel energy generators in an attempt to reduce greenhouse gas emissions in Australia. It also aims to dispel a generally accepted myth that Australia’s only carbon tax was that enacted by the Gillard ALP Government in 2011 and repealed by the Abbott Liberal Government in 2014.⁴

Despite the repeal of the *Clean Energy Act 2011* (Cth), this article also considers how it and the *REE Act* have worked as punitive taxes to reduce greenhouse gas emissions. To do so, it looks at Australia’s global position as a greenhouse gas emitter, as well as the nation’s electricity consumption, and its rate of greenhouse gas emissions, on a per capita basis. It illustrates how electricity consumption has been influenced by variations in the renewable energy certificate market trading prices (the *REE Act* tax rate) and the more direct carbon tax.

Examples of accounting entries for fossil fuel energy generators and renewable energy generators to account for the transactions associated with the carbon trading system are suggested. The article also suggests an accounting formula to quantify the economic cost of the carbon tax for consumers.

The article examines how the tax rate in the *REE Act* is set through the application of the Renewable Energy Target (RET). It looks at the relevant taxing/subsidisation sections of the legislation, how it functions, how it relates to Australia’s major income and consumption taxing systems, how it is placed within the concept of the sustainable development framework (the TBL), and how carbon credit trading transactions are accounted for. It finds that the *REE Act* has had a considerable influence on the reduction of greenhouse gas emissions by the Australian electrical generation industry. It concludes that the taxation and subsidisation regime works effectively, despite the operations of the *REE Act* being little known, or understood, by Australian accounting and taxation professionals, parliamentarians and society generally.

II. LITERATURE REVIEW

The overarching paradigm of this article is that of a sustainable development framework, wherein the three pillars of the TBL function in harmony. Hardisty observes that:

[t]he stated goal of almost every national government the world over is now economic development, led by increased industrialization, access to resources, energy, and the benefits of modern technology.

But, there has been a price. As industrial development has grown, so has the state of the global environment suffered – and with environmental degradation has also come human consequences; displaced peoples, ruptured cultures, loss of traditional places and values, health impacts, death. Indeed, as the population of

³ Yallop et al, n 2, 1220.

⁴ *Clean Energy Act 2011* (Cth).

the planet has continued to grow, and the overall level of development and industrialization has accelerated, so have the environmental and social costs multiplied.⁵

As to the question of taxation, a threshold question is whether a REC is an asset capable of being disposed of. It has been found that RECs are assets capable of being disposed of by a trustee in proceedings for the benefit of creditors.⁶ The Australian Government commissioned a report on the operations of the *REE Act* in 2003. The review was conducted by a committee appointed by the Australian Greenhouse Office and became known as the “Tambling Review”.⁷

The report was written in the context of the RET⁸ and the shortfall charge rate prevailing in 2003. The RET was 20,000 Gigawatt hours (GWh) of renewable energy generation by 2020 and the shortfall penalty charge at that time was AU\$40.⁹ Therefore the concluding estimates and predictions of that report are not in accordance with the current RET of 33,000 GWh, and the current shortfall penalty charge of AU\$65.¹⁰ This article uses similar principles to calculate the benefit of avoided income tax to estimate the market value of RECs (in 2010 referred to as large-scale generation certificates (LGCs)), but suggests a very different estimated market value to the estimated AU\$45 for 2003 stated in the Tambling Review.¹¹ Accordingly changes in the RET and the shortfall penalty charge have been encompassed in this article.

This article is based on data collated from a solar photovoltaic (pv) installation, the Solex Carnarvon Solar Farm, which tends to deviate from the findings of the review. However, a common key finding of the review, and this article, is that the trading price of RECs rises near to, but does not exceed, the tax-effective value of the purchase price of a REC (which has remained constant since 2011 at AU\$92.86) compared to the non-tax-deductible shortfall penalty charge.

While the Tambling Review is comprehensive, it does not attempt to suggest an accounting treatment for the creation, trade and surrender of RECs. Part VII of this article suggests how the creation, trade and surrender of RECs might be dealt with in the accounts of both enterprises which create RECs and the liable energy generators which surrender them in place of paying the shortfall penalty charge incurred from the generation of electricity using fossil fuelled generators.

The Tambling Review has been considered by a number of researchers: Kent and Mercer (2006);¹² Kelly (2007);¹³ Jones (2009);¹⁴ and Simpson and Clifton (2014).¹⁵ Despite the broad scope of published literature, researchers tend to focus on the structure of the RET itself and the principles of the operations of the RET. They consider how the RET is designed to encourage the development of renewable energy and to reduce CO₂ emissions, rather than developing an economic examination of the fiscal impacts of the RET. This article considers the economic market forces of the supply and demand of RECs as the primary determinant of REC market prices. It considers that the RET may influence demand and ceiling prices, but is not the sole determinant of day-to-day trading prices. For example, Kent and Mercer

⁵ PE Hardisty, *Environmental and Economic Sustainability* (CRC Press, 2010) 9–10.

⁶ *Re Bamboo Direct Pty Ltd (in liq)* [2016] FCA 264.

⁷ Mandatory Renewable Energy Target Review Committee, Parliament of Australia, *Renewable Opportunities: A Review of the Operation of the Renewable Energy (Electricity) Act 2000* (2003) (*Tambling Review*).

⁸ Prior to the enactment of the *Renewable Energy (Electricity) Bill 2009* (Cth), Australia’s Renewable Energy Target (RET) was known as the Mandatory Renewable Energy Target (MRET). For simplicity only the term RET is used in this article.

⁹ *Renewable Energy (Electricity) (Charge) Act 2000* (Cth) s 6.

¹⁰ The shortfall charge was increased from AU\$40 to AU\$65 in 2010. *Renewable Energy (Electricity) (Large-scale Generation Shortfall Charge) Act 2000* (Cth) s 6; and *Renewable Energy (Electricity) (Small-scale Technology Shortfall Charge) Act 2010* (Cth) s 6.

¹¹ *Tambling Review*, n 7, xxii.

¹² A Kent and D Mercer, “Australia’s Mandatory Renewable Energy Target (MRET): An Assessment” (2006) 34(9) *Energy Policy* 1046.

¹³ G Kelly, “Renewable Energy Strategies in England, Australia and New Zealand” (2007) 38(2) *Geoforum* 326.

¹⁴ S Jones, “The Future of Renewable Energy in Australia: A Test for Cooperative Federalism?” (2009) 68(1) *Australian Journal of Public Administration* 1.

¹⁵ S Simpson and J Clifton, “Picking Winners and Policy Uncertainty: Stakeholder Perceptions of Australia’s Renewable Energy Target” (2014) 67(C) *Renewable Energy* 128.

describe how the market in RECs functions, and note the shortfall penalty charge of AU\$40, but do not attempt to evaluate the market price or the process of accounting for the transactions. This article aims to provide an accounting process to be used by parties engaged in REC trading transactions.

The RET is the basis by which the tax rate applicable to fossil fuelled energy generators is set. Initially, the 2001 targeted reduction was set at a modest 300 GWh, or a target of 0.24% of Australia's electricity generation being from renewable sources. Initially the goal was to reach 41,000 GWh or an estimated 20% by 2020. However, that target has since been modified and reduced.

Table 1 shows how the RET, expressed in GWhs, relates to the tax rate levied on fossil fuel energy generators to avoid charges being levied under the *REE Act*. It shows the percentage of RECs required to be surrendered according to the volume of electricity generated. It also indicates the estimated annual electricity consumption and the actual electricity consumption for the years 2001–2020.

TABLE 1. Electricity sourced from Renewable Energy and the Renewable Power Percentage

Year	Required GWh of Renewable Source Electricity*	Renewable Power Percentage (RPP)** (REC/LGCs)	Estimated Total Electricity Consumption GWh (Required GWh/RPP)	Actual Electricity Consumption GWh***
2001	300	0.24	125,000	224,641
2002	1,100	0.62	177,420	227,563
2003	1,800	0.88	204,545	221,980
2004	2,600	1.25	208,000	229,627
2005	3,400	1.64	207,317	228,370
2006	4,500	2.17	207,373	232,549
2007	5,600	2.70	207,407	242,849
2008	6,800	3.14	216,560	242,924
2009	8,100	3.64	222,527	247,433
2010	12,500	5.98	209,030	252,454
2011	10,400	5.62	185,053	253,080
2012	16,763	9.15	183,202	249,972
2013	19,088	10.65	179,230	249,115
2014	16,950	9.87	171,732	249,037
2015	18,850	11.11	169,667	252,392
2016	21,431	12.75	168,086	257,430
2017	26,031	14.22	183,059	258,028
2018	28,637	16.06	178,313	261,056
2019	31,244	18.60	167,978	264,027
2020	33,850	19.31	175,298	265,178
2021	33,000	18.54	177,994	tba
2022	33,000	18.64	177,039	tba
2023–2030	33,000	tba	tba	tba

* *Renewable Energy (Electricity) Act 2000* (Cth) s 40.

** *Renewable Energy (Electricity) Regulations 2001* (Cth) reg 23.

*** Australian Government, Department of Climate Change, Energy the Environment and Water, *Australian Energy Update 2021* (2022) Table L <<https://www.energy.gov.au/publications/australian-energy-update-2021>>.

Table 1 reveals that initially the estimated consumption and the actual consumption of electricity were wildly different. The two figures came closer together in 2009 but they have diverged ever since.

There is a possible explanation for the growing discrepancy. An additional impost was placed on fossil fuelled energy generators in 2011 with the introduction of reg 23A of the *Renewable Energy (Electricity) Regulations 2001* (Cth) which added the requirement to surrender an additional class of REC – a small-scale technology certificate (STC).

An STC is an REC allocated to renewable energy generation systems of less than 100 kW generation capacity, using a pre-determined production formula rather than metering actual electricity production as is the case with generation systems in excess of 100 kW capacity.

Since 2011, STCs have been required to be surrendered in addition to those RECs required to be surrendered to comply with the renewable power percentage (RPP) as determined by the RET. In order to distinguish between the two classes of REC, RECs of the first class were renamed large-scale generation certificates (LGCs).

A separate RET was not set for the STC taxation system, but the RPP was regulated. Regulation 23A of the *Renewable Energy (Electricity) Regulations 2001* (Cth) as amended to November 2022 set the small-scale technology percentage as follows:

(a) for 2011 – 14.80%
(b) for 2012 – 23.96%
(c) for 2013 – 19.70%
(d) for 2014 – 10.48%
(e) for 2015 – 11.71%
(f) for 2016 – 9.68%
(g) for 2017 – 7.01%
(h) for 2018 – 17.08%
(i) for 2019 – 21.73%
(j) for 2020 – 24.40%
(k) for 2021 – 28.80%
(l) for 2022 – 27.26%

The following example is given to illustrate the effect of the additional impost of 2011. For 2013, the RPP of 10.65% shown in Table 1 is added to the small-scale technology percentage set out in reg 23A of 19.70%. The overall tax rate for fossil fuelled energy generators was therefore 30.35% of RECs (LGCs and STCs) per 100 GWh of electricity generated. Be aware that the combined tax rate is expressed in RECs and not in monetary terms. The actual fiscal cost of the tax is subject to the market forces which establish the trade price of the RECs surrendered in order to “pay the tax”.

As part of its commitment to take action against climate change, the Australian Government has set a target to reduce greenhouse gas emissions. The reduction is intended to be achieved, in part, by replacing fossil fuel energy sources with renewable energy sources for generating electricity. Therefore, the government enacted legislation to achieve that purpose, and the following section examines the legislation enacted to implement this RET.

III. THE LEGISLATION SUPPORTING AUSTRALIA’S RET

The initial enabling legislation to support Australia’s international agreement to take action on climate change was introduced in 1999 – the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

In June 2000, the Australian Government crystallised its desire to bring renewable energy into Australia's energy mix by passing "an Act for the establishment and administration of a scheme to encourage additional electricity generation from renewable energy sources, and for related purposes".¹⁶ The Act was passed by the Australian Parliament to "implement a government commitment to introduce a mandatory target for the uptake of renewable energy in power supplies in order to contribute towards the reduction of Australia's greenhouse gas emissions".¹⁷

In addition to the *Environment Protection and Biodiversity Conservation Act* and the *REE Act* itself, a number of other related acts support and provide for the administration of the creation, recording, transfer and surrender of RECs:

Renewable Energy (Electricity) (Charge) Act 2000 (Cth);

Renewable Energy (Electricity) Regulations 2001 (Cth);

Renewable Energy (Electricity) (Large-scale Generation Shortfall Charge) Act 2000 (Cth);

Renewable Energy (Electricity) (Small-scale Technology Shortfall Charge) Act 2010 (Cth).

The basic purpose of the *REE Act* is to "dilute" the atmospheric pollution. It encourages a system of "tax avoidance" activity such that an electricity wholesaler purchases RECs to demonstrate that a percentage of that electricity has been generated from a renewable energy source, in lieu of paying a penalty. That penalty is essentially a "carbon" or "pollution" tax. To encourage the "tax avoidance" activity by motivating liable parties to purchase RECs from renewable energy electricity generators, a subtle form of subsidy is thus created.

The operations of the *REE Act* are further supported by the provisions of the *Income Tax Assessment Act 1997* (Cth) (*ITAA 1997*) which permit such "tax avoidance" activity. As to capital gains tax considerations arising from the purchase of a right, the interpretation of s 8-1 of the *REE Act* considers the purchase of RECs to be recurrent and ongoing. The expenditure is therefore not considered to be of a capital nature and as such is not excluded from being a deductible expense for income tax assessment purposes.

In practical terms, placing the onus on each electricity generator to "dilute" the consumption of fossil fuelled energy with renewable energy would be extremely difficult, if not physically impossible. The concept of physically "mixing" renewable energy sourced electricity with fossil fuelled generated electricity at a central point is little more than philosophical, and is devoid of practicality.

In theory, it would require a fossil fuelled power station to be physically attached to a solar farm or some other renewable energy based generator. However, the *REE Act* overcomes that problem in a somewhat ingenious way. The following section looks at how the *REE Act* functions to create a "carbon trading system".

IV. HOW THE RENEWABLE ENERGY (ELECTRICITY) ACT 2000 FUNCTIONS

The Clean Energy Regulator is the Australian Government agency charged with administering the *REE Act* and its regulations. Through its electronic REC Registry it:

- provides the general public with basic information and facts about the renewable energy certificate market;
- lists the accreditation of eligible renewable energy power stations in Australia;
- facilitates the creation, registration, transfer and surrender of large-scale generation certificates (LGCs) and STCs;
- tracks the ownership and status of all certificates;
- provides access to the STC clearing house, and
- maintains various public registers as required by the *REE Act*.

The Clean Energy Regulator uses the REC Registry to manage, audit and report on:

- the participants within the renewable energy certificate market, and
- the renewable energy market as a whole.

¹⁶ *Renewable Energy (Electricity) Act 2000* (Cth).

¹⁷ Explanatory Memorandum, *Renewable Energy (Electricity) Bill 2000* (Cth).

All LGCs and STCs must be created in the REC Registry before they can be bought, sold, traded or surrendered. The REC Registry records the details and history of each individual certificate from creation, through any transfer of ownership and its eventual surrender.¹⁸

A registered renewable energy power station creates one REC (LGC) for every Megawatt hour of electricity generated and not used internally by the power station. That REC is allocated a unique identification number according to the registered person (the creator)'s ID, the source of fuel, the state in which the electricity is generated, the registration number of the power station and the year of creation.

In the case of the Solex Carnarvon Solar Farm, the accreditation code of the power station is SRPVWA04. This code indicates that it is a solar pv renewable energy system in Western Australia, and it is the fourth power station registered in that state.

For a REC created by the owner in 2016 the certificate is assigned a serial number as follows:

000000932-SRPVWA04-2016-0000034

(Creator ID) (Power station ID) (Year) (ID number)

The electronically registered REC is therefore unique and traceable, from creation to surrender, in much the same fashion as a banknote with a serial number. The REC can be traded by investors and speculators, held for an expected rise in market price and ultimately surrendered by a liable party.

In a similar way to the trading of any commodity, a market exists for futures trading, or an REC can simply be held as an investment. The value of a REC is dependent on the market forces of supply and demand, as well as market expectations of future value. It can also be subject to external intrinsic forces such as the political philosophies of external market forces.

Apart from a government sponsored market trading floor for STCs, outlined below, there is no overt physical or electronic market place for buyers and sellers. Trades are conducted by private treaty, and settlements take place essentially as a matter of trust. There are a number of agents or brokers, who buy/sell or arrange for trades between holders of RECs, investors and liable parties.

The trade prices are largely competitive depending on the liable parties' obligations under the prevailing RET and the supply volume of RECs from renewable energy power stations. The tax-effective value of RECs, discussed in the following section, has yet to be obtained in the market place. To date there have been more RECs available to the market than there is demand for them.

The administrative position in 2010 remained relatively unchanged from the position in 2001 save for the changes to the target volumes. The following illustration uses the statistical data for the year 2010 as shown in Table 1 above, to illustrate how the RET influences the REC market:

Required GWh	12,500 GWh
Renewable Power Percentage	5.98%
RECs generated	41,008,102*
Electricity generated	241,586,000 MWh

* Australian Government, Clean Energy Regulator, *Register of Large-scale Generation Certificates* <<https://www.rec-registry.gov.au/rec-registry/app/public/lgc-register>>.

In 2010 the required 12,500 GWh of electricity to be produced from renewable energy sources was estimated to be 5.98% of total electricity consumption. In reality, the percentage was only 5.17% not the estimated 5.98% as prescribed by the regulations.

If it is assumed that all the electricity purchased was purchased by "liable entities",¹⁹ which in fact, given the numerous exempt power generators in Australia, was not the case, then the volume of renewable

¹⁸ Australian Government, Clean Energy Regulator, *REC Registry* (2016) <<https://www.rec-registry.gov.au/rec-registry/app/public/about-the-registry>>.

¹⁹ *Renewable Energy (Electricity) Act 2000* (Cth) s 35.

energy certificates required to be surrendered in 2010 would have been: 241,586,000MWh x (5.98/100) = 14,446,843.

$$241,586,000 \text{ MWh} \times (5.98/100) = 14,446,843.$$

Data provided by the Clean Energy Regulator shows that 35,524,421 RECs were created in 2010 out of the 41,008,102 eligible for creation. In July 2015 the “oversupply” of RECs was continuing, and at that time 784,362 RECs from 2010 remained valid.²⁰

It was anticipated that as the RET increases and the roll-out of renewable power stations is less than the corresponding REC demand, that prices would rise, however to date that has not occurred. Therefore, it remains to be seen whether the liable parties would then choose to pay the non-deductible shortfall charge or to pay a premium for the deductible RECs.

STC trades follow a similar pattern, except that the Australian Government has a “clearing house” where liable parties can purchase STCs at a fixed price of AU\$40. Clearing house stocks are permitted to fall into deficit in the expectation that supply volumes will correct the shortfall at some future point. The STC clearing house is currently in deficit, and the STC market trading price is at, or very near to, the AU\$40 price fixed for clearing house trades.

The following section examines the impact of income and goods and service taxes on REC trading values.

V. HOW THE RENEWABLE ENERGY (ELECTRICITY) ACT 2000 RELATES TO AUSTRALIAN INCOME AND GOODS AND SERVICES TAXES

This section examines the relationship between the *REE Act* and the provisions of the *ITAA 1997* to consider how the “tax avoidance” activity of purchasing RECs to avoid penalties under the *REE Act* functions. It also considers how the GST provisions apply to REC trading.

The marketing of RECs is significantly influenced by the provisions of the *REE Act* and the *ITAA 1997*. As discussed in detail in Part VI below, the non-tax-deductible shortfall charge was initially set at AU\$40,²¹ but it rose to AU\$65²² in 2011. This section discusses how trading prices of RECs are determined not only by the provisions of the respective acts as to the deductibility of charges and/or penalties levied/incurred under the *REE Act* but also by the economic factors of supply and demand in a free market.

A. Income Tax Implications

Section 7A of the *REE Act* states:

To avoid doubt, a charge or penalty under this Act is not tax deductible for the purposes of any law dealing with income tax.²³

That section of the *REE Act* clarifies the taxation status of the shortfall charge. It supports the provisions of the *ITAA 1997*. Section 26-5 prevents the deduction of penalties from assessable income:

- (1) You cannot deduct under this Act:
- (a) an amount (however described) payable, by way of penalty, under an *Australian law or a *foreign law;

Section 51(4) of the *Income Tax Assessment Act 1936* (Cth) contains the same proscription as to the deduction of penalties from assessable income.

Therefore, in accounting terms, shortfall charges paid in lieu of surrendered RECs are after-tax costs. As such, they are a distribution of profit like the repayment of a loan, a capital purchase or a dividend to shareholders. On the other hand, if a REC is purchased to avoid the shortfall charge, the cost of purchase

²⁰ *Renewable Energy (Electricity) Act 2000* (Cth) s 35.

²¹ *Renewable Energy (Electricity) (Charge) Act 2000* (Cth) s 6.

²² *Renewable Energy (Electricity) (Large-scale Generation Shortfall Charge) Act 2000* (Cth) s 6; *Renewable Energy (Electricity) (Small-scale Technology Shortfall Charge) Act 2010* (Cth) s 6.

²³ *Renewable Energy (Electricity) Act 2000* (Cth) s 7A.

is considered to be an assessable income deduction, according to ordinary concepts. Section 8-1 of the *ITAA 1997* provides that a general deduction from assessable income can be made if “it is necessarily incurred in carrying on a business for the purpose of gaining or producing your assessable income”.²⁴

To confirm the interpretation that purchasing a REC in lieu of paying a charge under the *REE Act* alters the status of the cost from a non-tax-deductible to a deductible business expense, a private ruling was sought from the Australian Commissioner of Taxation. The ruling was that:

[A] liable entity [is] entitled to a deduction under section 8-1 of the *Income Tax Assessment Act 1997* (Cth) (*ITAA 1997*) for the cost of purchasing renewable energy certificates (RECs) to demonstrate compliance with the requirements of the *Renewable Energy (Electricity) Act 2000*.²⁵

The taxation bias created by the non-deductibility of the shortfall charge as compared to the deductibility of the purchase of RECs to avoid the penalty is a form of “acceptable tax avoidance”. It has been deliberately enacted to create a market for RECs and provide a revenue stream (subsidy) for renewable energy electricity producers.

To quantify the fiscal impact of the relationship between non-tax-deductible REC shortfall charges and tax-deductible REC purchase costs, the following formula is provided: $P/(1-Y) = R$

$$\frac{P}{1-T} = R$$

where:

Value of non-tax-deductible penalty = P;

Tax rate = T;

Value of tax deductible REC = R.

Prior to 2011, when the shortfall charge was AU\$40 and the Australian corporate tax rate was 30%, the influence of the tax deductibility advantage of purchasing a REC created a tax-effective value of a REC to a liable party as: $AU\$40/(1-0.3) = AU\57.14 .

$$AU\$40 / (1 - 0.3) = AU\$57.14$$

In 2011, when the shortfall charge was raised to AU\$65 and the corporate tax rate remained unchanged, the tax-effective value rose to: $AU\$65/(1-0.3) = AU\92.86

$$AU\$65 / (1 - 0.3) = AU\$92.86$$

In fact, due to the free market forces of supply and demand, the traded price of RECs has yet to reach these levels. By September 2016 market forces had resulted in a “near parity” price of AU\$86.75 for LGCs. That was around the peak price paid for LGCs. Since then, the market forces of supply and demand have caused the price of LGCs to remain between AU\$35 and AU\$45. However, it will be interesting to see if liable parties will be willing to pay a premium for LGCs if ever the trade price exceeds AU\$92.86. It may be considered more “socially” responsible to continue to purchase LGCs to offset atmospheric pollution than to pay what is essentially a pollution tax.

B. Goods and Service Tax Implications

The provisions of the Goods and Service Tax under the *A New Tax System (Goods and Services Tax) Act 1999* (Cth) (*ANTS (GST) Act*) apply to the sale and purchase of RECs.²⁶ The sale of a REC by a registered entity is considered a taxable supply²⁷ of goods.²⁸ Correspondingly, the purchase of a REC by a registered entity entitles that party to a credit for the GST component of the consideration.

²⁴ *Income Tax Assessment Act 1997* (Cth) s 8-1(1)(b).

²⁵ Australian Taxation Office, *Private Ruling to Alexander Fullarton* (Authorisation Number, 59756, 9 February 2006) 1.

²⁶ *A New Tax System (Goods and Services Tax) Act 1999* (Cth) ss 9-5, 9-10.

²⁷ *A New Tax System (Goods and Services Tax) Act 1999* (Cth) s 9-5.

²⁸ *A New Tax System (Goods and Services Tax) Act 1999* (Cth) s 9-10(2)(a).

The application of GST to the trading of RECs, particularly STCs, may cause a degree of perplexity. The following seeks to provide distinctions between occasions when GST is applicable to the sale/purchase of a REC and occasions when it is not.

Sections 9-5 and 9-10 of the *ANTS (GST) Act* provide that GST applies to all supplies by a registered enterprise unless the supply “is GST-free or input taxed”.²⁹ Section 9-10 provides that a “supply is any form of supply whatsoever”.³⁰ A REC falls within the meaning of “a creation, grant, transfer, assignment or surrender of any right”.³¹

It is considered a right, as it is a certificate registered under the provisions of the *REE Act* to enable a liable party to prove the generation of 1 MWh of renewable energy and then to generate a certain amount of electricity from a fossil fuel source. In common terms, this is a right to generate greenhouse gas emissions, for which that party would otherwise be penalised.³² Even if the supply was considered as a “financial supply”,³³ since it might be interpreted that a certificate is in lieu of a cash value, it would remain GST taxable as the certificate is not “money”, which is exempt under s 9-10(4).

Nonetheless, the GST is not applicable to all REC trades, as only registered entities are authorised to collect this tax. Generally, STCs are created from the installation of domestic solar pv and hot water systems, so are created by home owners who generally, in that capacity, are not registered to collect GST. It is therefore possible to assume that trades of STCs are exempt from GST. However it should be emphasised that this is not the case. Once the STC is acquired by a registered party, GST becomes applicable.

In the case of LGCs, that class of REC is created if the energy is generated from a power station in excess of 100 kilowatts. A system of that size could not be installed in a domestic dwelling, either physically or in accordance with the building and utility codes existing in Australia. An LGC is therefore, in practice, likely to be created by a GST registered enterprise.

An additional point of confusion as to the GST implications of a REC is that the surrender of a REC does not create a GST supply. It has been ruled by the ATO that the surrender of a REC is not a supply as there is no consideration involved in the surrender. The Clean Energy Regulator does not purchase the REC: it simply cancels it with no exchange of value. It is considered that as no transaction takes place, no GST applies.³⁴ While that interpretation has been drawn, it remains unchallenged. From it, one might assume that the purchase of a REC is exempt from GST, given that no GST sale is conducted upon the REC’s surrender. However, this presumption would be erroneous, since the entity responsible for the liability essentially consumes the REC, thereby functioning as the ultimate consumer. Nonetheless, the liable party is eligible for a GST input credit, given that it represents a manufacturing cost.

It would seem, therefore, that transactions involving the trading of RECs are exempt from GST. However, this is not the case. Numerous trades, along with corresponding GST debits and credits, may occur during the interim period between the creation and the surrender of a REC, since these certificates are frequently utilised as speculative derivatives by investors seeking to capitalise on market price fluctuations.

It should also be noted that the Clean Energy Regulator, which administers the clearing house for STC trades, does not require STC sellers to be GST registered, as they are generally small domestic renewable energy generators, but it does require STC buyers to be registered.³⁵ The sequence of GST debits and

²⁹ *A New Tax System (Goods and Services Tax) Act 1999* (Cth) s 9-5.

³⁰ *A New Tax System (Goods and Services Tax) Act 1999* (Cth) s 9-10(1).

³¹ *A New Tax System (Goods and Services Tax) Act 1999* (Cth) s 9-10(2)(e).

³² *Renewable Energy (Electricity) (Charge) Act 2000* (Cth) s 6.

³³ *A New Tax System (Goods and Services Tax) Act 1999* (Cth) s 9-10(f).

³⁴ ATO Interpretative Decision ATO ID 2004/956 (Withdrawn) Goods and services tax GST and surrender of a renewable energy certificate to a government regulator; ATO Legal Database (2004) <<http://law.ato.gov.au/atolaw/view.htm?docid=AID/AID2004956/00001>>.

³⁵ Australian Government, Clean Energy Regulator, *Renewable Energy Target: REC Registry and Small-scale Technology Certificate Clearing House – Terms and Conditions* (2009) Item 3.6 <<https://www.cleanenergyregulator.gov.au/DocumentAssets/>>

credits renders the transaction revenue neutral as to the impact of the GST collections. However, the impost of the GST is eventually borne by the end consumer of the electricity generated by the liable party.

For the past 18 years, trading in RECs by the Solex Project to liable parties and marketing agents has been conducted and reported in accordance with this interpretation. The interpretation has not been challenged by any of those parties, which include some major publicly listed mining companies. The purchase of a REC becomes part of the operating costs of a fossil fuel-based enterprise. Therefore, this additional cost to fossil fuel-generated electricity charges will, it is submitted, eventually increase. Likewise, the sale of and income from a REC subsidises the operating costs of a renewable energy electricity generator, and should ultimately reduce electricity charges by those enterprises, or make them more profitable.

The following section looks at how the *REE Act* impacts on the overall sustainable development framework – the corporate TBL reporting requirements in Australia.

VI. HOW THE RENEWABLE ENERGY (ELECTRICITY) ACT 2000 IMPACTS ON THE TRIPLE BOTTOM LINE

The RET has become a very sensitive political issue between the Australian Labor Party (ALP), the Liberal Party (Lib) and the Greens (GRN). In 2010 the ALP Government increased the RET from its originally targeted 4.27% for the 2010 year to 5.98%, and raised it to 10.65% (more than half way to its original target of 20% by 2020) in 2013.³⁶

The ALP Government also introduced other legislation aimed at promoting environmentally sustainable projects, such as a mining rental resource tax and a tax on carbon emissions. Industry reacted strongly to those taxes, and a political campaign focused on repealing them was conducted in 2010 to replace the ALP Government with a more industry biased Liberal Government. In 2014, the Liberal Government repealed both the mining tax and the carbon tax. Interestingly however, the ultimate outcome of 20% electricity generation from renewable sources by 2020 remained the RET for the Liberal Government.

However, in 2015 there was considerable political pressure to reduce, or even abolish, the RET for Australia. A compromise was set at 33,000 GWh or around 15%. Curiously, the requirement on liable parties to surrender STCs does not appear to be considered in that targeted amount.

The market price of LGCs has been significantly influenced by political interests. The LGC market changed the focus of an LGC from an economically driven factor to reduce pollution to a speculative commodity on a futures market, influenced by varying political philosophies. The prime purpose of a RET, driven by tax rates and economic market forces, became lost in the political divisions which prevail in the Australian Parliament. Figure 1 indicates how some major political decisions influenced the market price of LGCs during the period 2003–2011.

[Documents/REC%20Registry%20and%20Small-scale%20Technology%20Certificate%20clearing%20house%20-%20terms%20and%20conditions.pdf](#).

³⁶ Australian Government, Clean Energy Regulator, *About the Renewable Energy Target* (2022) Renewable Energy Target <<https://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target>>.

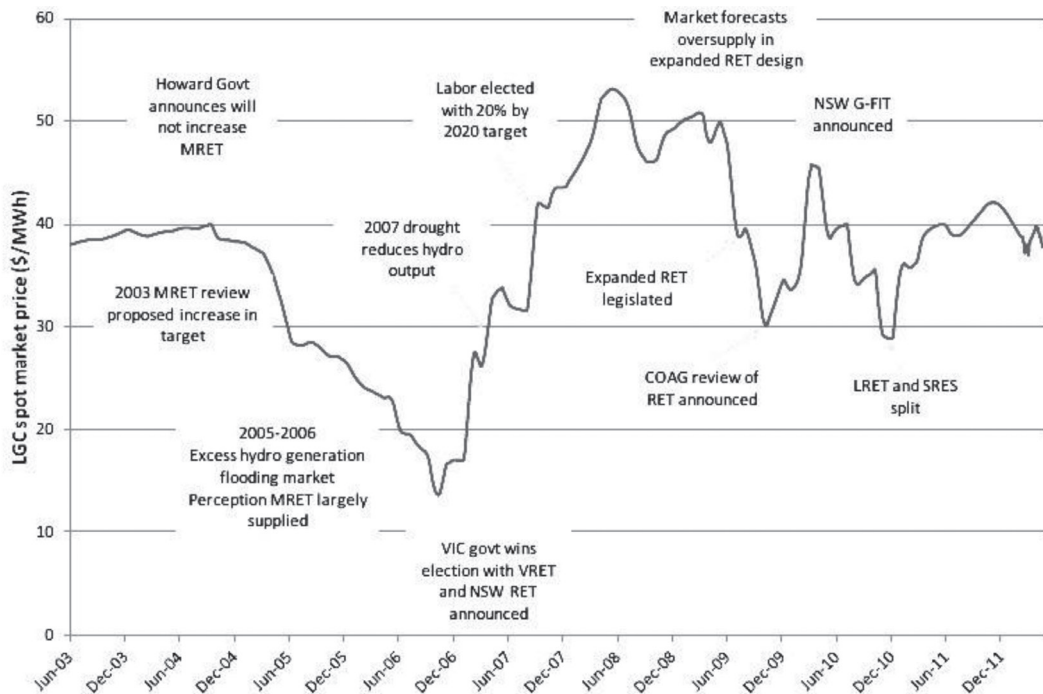


FIGURE 1. Political influences on the LGC/REC market prices 2003–2011.*

* ROAM Consulting Pty Ltd, *Solar Generation Australian Market Modelling* (Report to the Australian Solar Institute, 2012) 38.

Underlying spot price curve sourced from Green Energy Markets and the Clean Energy Council.

List of abbreviations: COAG: Council of Australia Governments (PM and state Premiers); LRET: Large-scale Renewable Energy Target; MRET: Mandatory Renewable Energy Target; NSW: The State of New South Wales; NSW G-FiT: Gross feed-in tariff; RET: Renewable Energy Target; SRES: Small-scale Renewable Energy Scheme; Vic: The State of Victoria.

However, ultimately the provisions of the *REE Act*, and in particular the carbon tax legislation, did have an effect of Australia's use of energy and in particular the use of fossil fuels. The graph in Figure 2 shows the decline in electricity consumption in the Australian National Electricity Market (NEM) after 2008–2009.

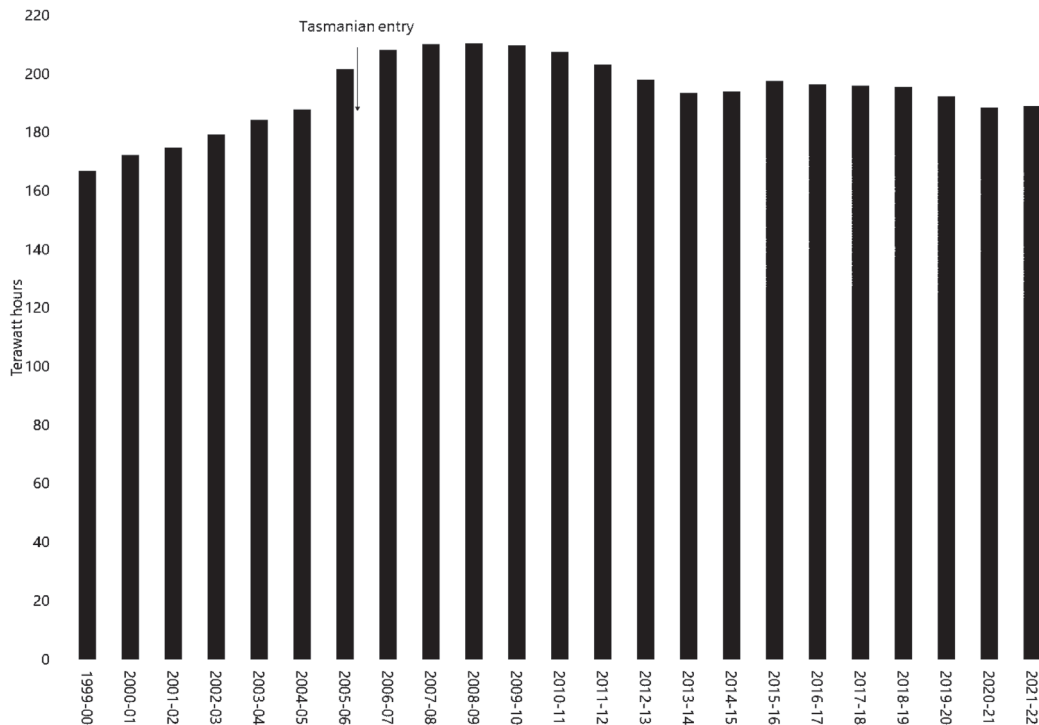


FIGURE 2. National Electricity Market electricity consumption 2000–2022.*

* Australian Energy Regulator, *National Electricity Market Electricity Consumption* (2016) <<https://www.aer.gov.au/node/9765>>. Scale is in Terawatt hours, 1 TWh = 1000 GWh.

Electricity consumption is monitored and published by the Australian Energy Regulator (see Figure 2). Following the inclusion of Tasmania in 2006–2007, market consumption levelled out, before declining between 2013 and 2015. Despite an increasing population, Australian electricity consumption has remained relatively stable ever since.

Figure 2 clearly shows that Australians have reduced their electricity consumption since 2008–2009. However, it does not reveal the “energy mix” between electricity generated from fossil fuels and electricity generated from renewable energy sources. As the RET has been rising over those years, and there is a surplus of RECs in the market place, it is reasonable to assume that the contribution of renewable energy has increased, and therefore that greenhouse gas emissions have decreased accordingly. Further, it is acknowledged that electricity consumption may also have fallen due to increased energy efficiencies.

It should also be noted that energy consumption rose after 2014. That may be attributable to the repeal of the carbon tax and a corresponding decrease in the cost of electricity for the consumer. It may also be attributable to a rise in the volumes of renewable energy available to consumers.

Either way there was a considerable reduction in fossil fuel energy generation. That is due, at least in part, to the impact of the RET and the operations of the *REE Act*.

Society and environmentalists (the subsidy recipients) may want high targets, but heavy industry, and in particular the fossil fuel energy generators (the taxpayers), may want low targets. Furthermore, there is a discrepancy between the volumes indicated in Figure 2 and the total consumption of the entire nation. The NEM data does not include electricity consumption in Western Australia or the Northern Territory. Table 1 includes those states but is also subject to some under-reporting. The data given in Table 1 suggests the national average is closer to 240,000 GWh, though this figure is some years out of date.

Be that as it may, if 200,000 GWh is accepted as a subjective baseline, then the RET “estimation” is simply a matter of deciding what percentage target is desired. The annual increment volume is calculated by multiplying that percentage by 2,000. That is, a 20% target is achieved by setting 40,000 GWh as the required GWh of renewable source electricity: $20\% = 20/100 = 40,000/200,000$

$$20\% = 20/100 = 40,000/200,000$$

Simplicity has long been held to be one of the essential criteria of a “good tax system”,³⁷ and that is the basis for this recommendation. However, setting RETs is also influenced by political interests, as examined above.

The final section illustrates a suggested approach to accounting for the financial transaction of carbon trading under Australia’s RET scheme.

VII. HOW TO ACCOUNT FOR CARBON CREDIT TRADING

The preceding sections have examined the structure of Australia’s RET system from a philosophical perspective – the reason for the legislation and the principles of its operation. In that examination, similarities with taxation legislation were considered. The *ITAA 1997* was compared to the RET and the carbon tax legislation to illustrate the economic influences of taxation systems on social behaviour.

This section looks at the accounting treatment of the fiscal transactions in the REC market and the income tax and GST implications of those transactions. To illustrate the entries in the accounts of a REC producer, an extract from the Solex Project’s financial accounts is presented.

The sale of RECs created from harvesting renewable solar energy is part of Solex’s revenue and is presented in the form of a primary producer’s livestock account. It is considered that the creation of RECs is similar in philosophy to the breeding of livestock by way of “natural increase”.

Extract from Solex accounts of 30 June 2010				
Renewable Energy Credits (Livestock A/c)				
		Number	Value	
Sales				AU\$0.00
Less	Opening Stock	34	AU\$1,467.72	
	Natural Increase	182		
	Purchases	157	AU\$7,065.00	
		373	AU\$8,532.72	
				-
Less	Closing Stock	373	AU\$15,812.72	AU\$7,280.00
Gross Profit from RECs				AU\$7,280.00

A liable party’s accounts do not reflect a similar accounting treatment as the entity does not “breed” or manufacture RECs. The examples below have been simplified to demonstrate the impact of the tax avoidance activity of purchasing RECs at prices below their equivalent tax-effective value. In practice the volumes and values of electricity generation are far higher. In these hypothetical accounts a small corporate profit has been rendered as a loss if the option to pay the shortfall charge is exercised.

The accounts of the liable party first disclose the purchase of RECs as a revenue item in the expense account. In the second example the shortfall charge is disclosed as a taxation expense in the profit distribution account, in the same way as other taxes, dividends and the like.

³⁷ CCH Australia Ltd, *The Asprey Report: An Analysis* (1975) 8.

An extract of a revenue statement of a liable party			
Case 1: LGCs and STCs purchased to avoid the non-deductible shortfall penalty:			
Income tax			
Gross sales revenue	(10 MWh @ AU\$100)		AU\$1000
Administrative costs	AU\$200		
Financial costs	AU\$200		
Operating costs	AU\$400		
Purchase of RECs (10 @ AU\$10)	AU\$100	AU\$900	
Net profit (assessable income)		AU\$100	
Corporate tax 30%		AU\$30	
After-tax distributable profit		AU\$70	
GST Account			
GST credits from purchases	AU\$90	GST levied on sales	AU\$100
GST payment due	AU\$10		
	AU\$100		AU\$100

The company has an income tax liability of AU\$30, a AU\$90 GST credit and a AU\$100 GST debit.

Case 2: Non-deductible shortfall charge is paid in lieu of surrender of LGCs and STCs			
Income tax			
Gross sales revenue	(10 MWh @ AU\$100)		AU\$1000
Administrative costs	AU\$200		
Financial costs	AU\$200		
Operating costs	AU\$400	AU\$800	
Net profit (assessable income)		AU\$200	
Corporate tax 30%		AU\$60	
Shortfall charge (10 MWh @ AU\$40)		AU\$400	AU\$460
Loss of shareholders' funds			AU\$260
GST Account			
GST credits from purchases	AU\$80	GST levied on sales	AU\$100
GST payment due	AU\$20		
	AU\$100		AU\$100

The company has an income tax liability of AU\$60, a AU\$80 GST credit and a AU\$100 GST debit.

VIII. SUMMARY AND CONCLUSION

This article has looked at part of the actions taken in Australia to combat climate change by reducing the greenhouse gas emissions caused by burning fossil fuel to generate electricity.

In 2000 Australia introduced a RET in an attempt to make a considerable reduction in atmospheric pollution and to uphold its international responsibilities as a member of the United Nations. The legislation supporting that dilution of greenhouse gas emissions, by way of encouraging an uptake of electricity generation from renewable energy sources, is primarily Australia's *REE Act*.

On the one hand, the *REE Act* functions as a taxation system, as the fossil fuelled generation industry is compelled to surrender a carbon credit (a REC) or pay a penalty. The penalty rate is fixed according to the volume of electricity generated and is an after-tax impost. On the other hand, renewable energy electricity generators are subsidised in the form of the revenue received from the creation and sale of RECs.

The *REE Act* works by encouraging a form of tax avoidance by substituting the non-tax-deductible charges levied on fossil fuel electricity generators for RECs surrendered in lieu of the charges. The purchase of RECs, which are created by renewable energy electricity generators, is allowed as a tax deduction.

This article has described how the *REE Act* functions and how its impacts reduce Australia's greenhouse gas emissions. Also illustrated is a method by which the financial transactions for trading RECs may be shown in the books of account of both parties.

In modern times the world's nations have recognised the dangers of climate change from the global warming caused by greenhouse gas emissions. As a consequence, this article acknowledges that some of the fall in Australia's electricity consumption may be due to non-economic factors. Social influences, such as people's desire to become energy efficient to reduce greenhouse gas emissions for the benefit of the natural environment, may have contributed.

However, this article considers that much of the social drive to move away from fossil fuel electricity generation is derived from rising economic costs. It concludes that, while the RET may be unpopular with industry because it increases the economic costs of production and taxation expenses, the provisions of the *REE Act* have made significant progress towards reducing fossil fuel consumption and, consequently, successfully tackling climate change.