Submission to the Senate Inquiry into the Renewable Energy (Electricity) Amendment Bill 2010 [Provisions]; Renewable Energy (Electricity) (Charge) Amendment Bill 2010[Provisions]; Renewable Energy (Electricity) (Small-scale Technology Shortfall Charge) Bill 2010 [Provisions]

24th May 2010

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Legislation under review:

Renewable Energy (Electricity)Act 2000 **(Cth);**
Renewable Energy (Electricity)(Charge) Act 2000 **(Cth);**
Renewable Energy (Electricity)(Small-scale Technology Shortfall Charge) Bill 2010 **(Cth):**

Preamble:

- The World population cannot continue to pollute the planet without suffering the consequences. The view of human activity causing climate change is immaterial to this precept, as pollution, particularly through the combustion of fossil fuels, has a raft of undesirable consequences.

  Oil spills and fires caused through the recovery and transportation of fuel have disastrous consequences. Incidents such as:

  > The Apache Wells oil rig failures over a number of years;
  > The West Atlas oil rig fire and spill in the Timor Sea;
  > The installation fire on Varanus Island off Western Australia;
  > Shipping disasters ranging from the 'Exxon Valdez' in Alaska to the 'Seng Neng 1' on Australia's Great Barrier Reef;
  > BP's oil rig collapse in the Gulf of Mexico; and
  > Countless road tanker spills and collisions:

  demonstrate the significant environmental damage caused by the reliance on fossil fuels long before it reaches the combustion stage and the resultant loss to air quality and atmospheric toxins;

- The use of natural energy sources such as solar, wind and wave technologies have no such environmental impacts as to their fuel source. The use of bio-fuels greatly reduce damage caused from oil recovery, refining and transportation, however combustion problems remain;

- Dispersed, embedded, solar photovoltaic (PV) installations have proven to be a very cost effective method of supplementing fossil fuelled energy generation, transmission and distribution;

- Australia lags very much behind the World generally, in the installation of embedded solar PV systems. This is despite Australia having one of the greatest source of solar energy in the World;

- This legislation seeks to rectify that rate of conversion to solar PV by granting incentives and creating barriers to continued fossil fuelled energy production. However it does have problems in its implementation.

Focus:

A three-fold approach to combating reliance on fossil fuelled energy production and its associated hazards has been considered and partially implemented by the Australian Governments with mixed successes:

The **first approach** is to encourage consumers to reduce consumption of energy through better energy use practices and more efficient appliances. This carried out by the encouragement of the use of fuel efficient motor vehicles, energy efficient electrical appliances, architectural designs and insulation of existing buildings (passive solar).

The **second approach** is to encourage the production of non-polluting energy systems and renewable energy sources to supplement, or replace where possible, polluting fossil fuelled energy systems (active solar).

The **third approach** is to impose a penalty on high energy consumers using large sources of fossil fuels. This approach is often referred to as a 'carbon tax' or 'carbon trading.'

The focus of this submission is on the second approach, its related and proposed legislation. However the third approach has consequences for the second.

Background and context:

The global implications of atmospheric pollution have been known to the scientific community for many years. Sturman and Tapper referred to 1989 research when they stated

> [T]he human species caused little impact on the environment beyond the local or regional level. However the technological and economic development and associated population increase that accompanied the Industrial Revolution have dramatically altered this situation to a point where there has been massive global environmental change.[1]

Until now the cost of pollution and environmental degradation cost has been borne by the general community and until recently has never been accounted for as an industrial cost of production.

Over the last 100 years fossil fuel miners and energy generators have grown into rich and powerful multinational organisations. They have demonstrated far reaching economic and political powers in their relationships with Government. They are primarily motivated by profit, which of course is the primary directive of business.

Concern for the environment has not been a voluntary consideration by industry. Generally moves towards environmental responsibility have been as a result of disastrous events such as those mentioned above. However in a number of cases, denial of damage and protracted litigation have resulted rather than an acceptance of the damage that fossil fuels, in particular oil recovery, refining and transportation, can do to the physical environment.

Generally there has been a lack of political will in Australia to face the dual problems passing on the real cost of energy to consumers, and the successful objections to the introduction of 'unreliable and intermittent' natural energy systems to the highly regulated electricity transmission and distribution grids by the very profitable and highly motivated oil and coal producers. This lack will in facing the mounting challenge has been demonstrated by successive Federal governments for a number of years.

1 Andrew Sturman and Nigel Tapper, *The Weather and Climate of Australia and New Zealand* (1996) 384.

In 2000 the Howard Liberal Government enacted the *Renewable Energy (Electricity) Act 2000* and it accompanying *Renewable Energy (Electricity) (Charge) Act 2000*. This legislation attempts to 'dilute' pollution, caused by fossil fuelled energy production, by requiring a percentage of non-fossil fuelled energy to be produced as a total of overall energy production.

In 2001 the Renewable Power Percentage (RPP) was 0.24 per cent.[2] This required a liable party to surrender 240 Renewable Energy Credits (RECs) 2001 for every 100 000MWh purchased. The non-tax deductible charge[3] of $40 was imposed for each rec shortfall in that year. Annual increments to the RPP, by way of amendments to the *Renewable Energy (Electricity) Regulations*, have occurred since 2002. In 2009 the RPP had risen to 5.98 per cent and the charge to $65 as indicated in Figure 1 below.

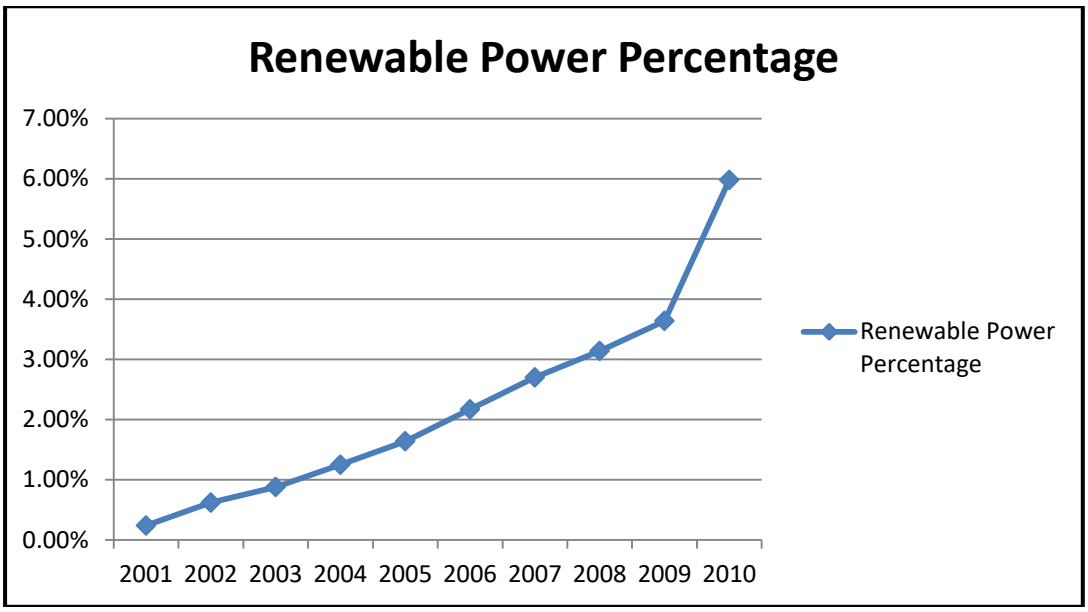

Figure 1. Increment of the Renewable Power Percentage 2001 – 2010.
(Source: Renewable Energy (Electricity) Regulations 2001)

To illustrate the increase in cost of the RPP, which is effectively a Carbon Tax, a hypothetical example of a 100 MWp power station running at full capacity is calculated hereunder:

100MW per hour for 24 hours for 365 days, assume no losses, equals 876 000 MWh

In 2001 the RPP (0.24%) and charge ($40) for the plant was **$ 840 96.**
In 2009 the RPP (5.98%) and charge ($65) (payable in March 2010) will be **$ 3 405 012.**

The shortfall charge is not tax deductible however the purchase of RECs to avoid the charge is a legitimate business expense and is tax deductible under the provisions of the *Income Tax*

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

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

Assessment Act 1997.[4] Therefore the effect of tax must be considered when accounting for the above RPP. Assuming a company tax rate of 30 per cent the before tax cost of the RPP (carbon tax) on the plant is **$ 120 137 for 2001** and **$ 4 864 303 for 2009.** The penalty has risen from a negligible sum (in company accounting terms) to a significant item in company accounts.

An Australian Accounting Standard has yet to be developed for the accounting treatment of creation and trading of however the writer has proposed a method of accounting treatment to be considered by accounting bodies for the creation, purchase and sale of RECs, refer **Appendix A.**

In theory, the before tax value of a REC has risen from **$57** to **$93**. In practice the market for RECs never reached that point. A number of economic factors have resulted in RECs trading for as little as $10 - $15. The convoluted method of applying the 2000 legislation has resulted in a poor understanding of creation, transfer and surrender of RECs. This in turn has resulted in the 'carbon trading' system being exploited.

To further compound the complexity of the 'carbon trading' system a series of capital rebate incentives have occurred over the years. These have ranged from a $4 000 cash rebate in 2003 to $8 000 in 2007 to a limited $7 500 in 2008. These have now been removed entirely and replaced with an artificial 'multiplier' to 'deemed' RECs granted to installation owners. These 'phantom' RECs have further influenced the market by driving trading prices down below the tax effective value.

This proposed legislation is an attempt to rebalance the economic disequilibrium by quarantining small generation units from the REC generation system and to provide a minimum value, currently $40.

A Case Study Embedded solar PV systems

Embedded solar PV installations rely on the utility owned and operated electricity grids to maintain and control the specifications of electricity by setting the voltage and frequency standards of the grid. The utilities are required thus to install and maintain entire electricity systems yet receive no return from the sale of energy as consumers effectively produce their own. This has not been lost on policy makers of electricity generation utilities who are resisting the roll-out of dispersed embedded solar PV systems.

In order to maintain control of the grids by energy producers, solar PV has been limited Limitations have been placed on the size of solar PV systems to as little as 1500 watts (roughly the power of a domestic vacuum cleaner). These limitations have driven installation costs to uncommercial levels. Installation costs were over $10 per watt in 2008. In 2010 these costs have been reduced to less than $6 per watt generally and as low $5.30 per watt when installed in systems of 6 kWp or more;

In some jurisdictions further limitations have been placed on visible, roof mounted solar PV installations on aesthetic or architectural grounds. It is noted that the State of New South Wales has legislation in place to permit the installation of solar PV systems to most residences in the State. However arguments as to the disruption of intermittent and unreliable

4 Private tax ruling held by A R Fullarton 9th February 2006.

properties of natural energy continue to be used in most cases. In New South Wales, despite legislation permitting virtually unlimited installation of solar PV systems, the 1500 watt limitation has resulted in virtually no payout of the generous Feed-in Tariff (FiT) of 60 cents/kWh as the 1500 watt systems cannot cover domestic use let alone supply excess to the grid.[5] In any event the utilities were carrying forward credits rather than paying the consumers cash.

On the other hand, Horizon Power, Western Australia's government owned regional power provider, has demonstrated enthusiasm to adopt dispersed embedded solar PV within its networks. The cost savings of reduced fuel consumptions have had significant impact on its rural and remote power stations in North West Western Australia. To this end Horizon Power's policy on the installation of solar PV installations is that it automatically approves connection of domestic installations to 30kWp or 10kWp per phase.

Generally an installation of 6 kWp are favoured as that is the size of commercially produced inverter/transformers and around 36 solar PV panels are readily accommodated on the average house roof. The 6 kWp solar PV system produces 9 700 kWh (units) per annum or 26 kWh per day average. This can rise to as high as 40 kWh in summer. The supply of energy is not only cost effective to the consumer, as many costs of installation are fixed costs, but sufficient electricity is spun off to the grid to stabilise energy supplies to neighbouring homes.

The small community of Carnarvon, in Western Australia, has over 250 kWp, or nearly 2 per cent of the production capacity of the town's diesel/gas power station by way of embedded solar PV installations. This was established as a trial to evaluate the effect of high density embedded solar PV by the citizens of Carnarvon in co-operation with Horizon Power.

The community self-help group, known as the 'Fruitloops' have greatly reduced installations costs and even after the extinction of government capital rebates have continued to roll out embedded solar pv installations. Business, horticulturalists and domestic residents as well as the Shire of Carnarvon are members of the rapidly growing group.

This has been achieved largely through the Rural and Remote Power Generation Program (RRPGP) however recent rises in electricity tariffs and the reduction in the cost of materials as well as cost savings through self-help by members of the community. It has also heavily relied on the co-operation and support of Horizon Power. The 'Fruitloops' were finalists in the Western Australia Regional Achiever Awards in 2009 as a community group.

The Carnarvon study has generally discounted the need for an artificially inflated. However since the loss of the capital subsidy of the RRPGP a two-for-one exchange for electricity surpluses to the grid has been proposed by the writer, as attached in Appendix B.

The sale of RECs deemed by this group for their Small Generation Units (SGUs) has been by way of aggregating deemed RECs and selling them directly to a 'Liable Party'. Some owners have traded them by way of an agent but the majority have made the decision to hold them as an 'investment' in the belief that the market price will continue to rise. This decision was negatively impacted by the decision to create 'phantom RECs' through the multiplier.

5 Ben Cubby and Andrew Small, '$300 cost for meter to measure solar feed', *The Sydney Morning Herald* (Sydney) 28January 2010.

Despite the impacts of the 'multiplier', which this legislation seeks to mitigate the market price of RECs is slowly improving in line with the increased shortfall charge.
It is also noted that the supply of RECs, despite the creation of 'phantom RECs' is starting to be impacted by the higher penalty RPP. It will be February 2010 before the actual economic balance and therefore REC price is established.

A shortfall in the supply of RECs could result due to further increases in the RPP, which will have to occur if the Mandatory Renewable Energy Target (MRET) is to be reached within the next ten years. In the opinion of the writer, Australia lacks the volume of renewable energy generation systems to fulfil supply demands.

Finally the creation of the 'REC Multiplier' is not an incentive by the Government it is an impost on liable parties as it is they who will have to buy the RECs not the Government, despite this proposed legislation. The Government incentive schemes should be paid directly as a cash incentive not convoluted by way of creation of artificial RECs which are then purchased. Does the Government intend to dispose of the RECs to liable parties, assumedly at a profit or does it intend to surrender them at a cost to the taxpayer?

Proposals:

The multiplier has caused an oversupply of RECs which has reduced a well meaning incentive to the point where this proposed legislation was considered however the *Renewable Energy (Electricity)(Small-scale Technology Shortfall Charge) Bill 2010* (Cth) is therefore superfluous and should not be passed by the Senate. The supporting amendments to the other Acts are therefore no longer required.

The RPP will continue to rise in annual increments to reach the desired renewable energy target. Amendments to the *Renewable Energy (Electricity) Act 2000* and its supporting regulations must be supported, now and in the future, to establish the effectiveness of the 'carbon tax and trading system' embodied by that legislation.

It is suggested that this legislation will further complicate an already complex system of carbon tax and carbon trading. The increase in the shortfall charge and the penalty rate in 2009 will gradually bring about an increase in the market price of RECs through normal economic forces. At the date of writing this submission, the agents are paying $43 per REC which exceeds the proposed $40 per REC. It is fair to assume the agents will not be selling at a discount to liable parties.

Government incentives should return to funding the RRPGP and associated capital incentive programs to increase the volume of embedded renewable energy systems rather than creating further complexity to an already complex matter.

Governments and utilities must also cease the practice of subsidising fossil fuel energy producers by way of 'Standard' tariffs which ultimately result in consumers not facing the real cost of fossil fuelled energy production.

Appendix 'A'

Suggested Accounting Treatment for Renewable Energy Credits (RECs)

A Renewable Energy Credit (REC) is created pursuant to the *Renewable Energy (Electricity) Act 2000* (Cth) (as amended). The *Act* prescribes that 'a registered person may create a certificate for each whole megawatt hour (MWh) of electricity generated be an accredited power station'.[6] The REC does not take a tangible form but is held electronically on a public internet website.[7]

The general principle is that for every MWh of electricity generated by means of non-fossil fuel[8] combustion a REC is granted in acknowledgment of that 'renewable' energy generation. On the other hand generators using fossil fuels are liable to a penalty for every 100 MWh produced. The primary object is to dilute pollutants caused the use of fossil fuels.

A 'liable party' is a person who generates electricity through the use of fossil fuels who has a generation plant in excess of 100MWp OR connects to a grid which has a total capacity greater than 100MWp. This point is of relevance to auditors as many power stations have been constructed of less than 100MWp (in a number of cases 98-99MWp) as a method of avoiding the penalty. Where two or more of such stations are interconnected then the total generation capacity of the network is the determining factor.

The liable party is required to surrender a prescribed number of RECs for every 100MWh produced annually.[9] The 'Renewable Power Percentage' is set each year by regulation and has been rising since first introduced in 2001.

In 2010 a liable party operating a 100MWp fossil fuelled power station running at maximum capacity is liable to surrender 52 349 RECs to comply with the *Act*. In 2001 the requirement was 2103 RECs. In lieu of RECs surrendered the liable party is required to pay a penalty for each REC shortfall. The penalty for 2010 is $65 for every REC shortfall or $3 402 685 in the example used. In 2001 the penalty was $40 or $84 120 in the example used. The expense for compliance with the *Act* has become significant to all parties and accountants should have a consistent approach to dealing with the requisite transactions.

A further matter of importance is the tax effect of accounting treatment. Section 7A of the *Act* prescribes '[t]o avoid doubt, a charge or penalty under this Act is **not** tax deductible for the purposes of any law dealing with income tax.' (emphasis added). Accountants must be aware, and report, any penalties or charges incurred in compliance of the *Act* are after tax items.

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[6] sub-section 18(1).

[7] Australian Government, Office of the Renewable Energy Regulator, *REC-Registry* available at <https://www.rec-registry.gov.au/>.

[8] Some 23 eligible renewable energy sources are prescribed in section 17 of the Act.

[9] A 100MWp power station running at capacity for 12 months would generate **876 000MWh**.

However the cost of purchasing RECs is not a penalty under a law and is considered an expense necessarily incurred in carrying on a business. As such a business purchasing RECs, albeit to avoid a penalty, is entitled to a deduction under section 8-1 of the *Income Tax Assessment Act 1997*.[10] This is an important distinction for accountants and taxation lawyers.

The writer is unaware of any prescribed accounting standard published which deals with the treatment of the generation, sale, purchase or surrender of RECs to date. It is suggested that the National Institute can lead in the establishment of such a standard.

The writer is a qualified taxation lawyer, accountant and the builder, owner and operator of a renewable energy generation plant. As such the writer has been creating, purchasing and selling RECs since 2005. Accounts and taxation returns have been prepared by the writer and assessed by the Commissioner of Taxation accordingly. A private tax ruling has been issued to the writer to evidence the validity of the proposed accounting and taxation treatment.

A REC is an artificial asset constructed by law. This feature has made it difficult to be readily understood by liable parties and accounting and legal professionals. However Accountants and lawyers have been dealing with taxation for a considerable period. Generally the surrender of RECs in compliance with the *Act* should be treated no differently to income tax liabilities.

Complications arise in that liable parties generally do not create RECs. Should liable parties choose to purchase RECs in order to avoid the annual penalty then the cost of purchase of the RECs is considered an expense according to ordinary concepts. The Profit and Loss account shows and expense item renewable energy credits (value).

However the surrender of RECs however may not match the numbers purchased. If a shortfall exists in one year then the cost of purchase of RECs is disclosed in the P&L account as an ordinary expense. The penalty incurred is disclosed after the net profit but before the after tax profit and the penalty disclosed as a tax liability accordingly.

In the event of an excess of RECs purchased, to cover the penalty incurred, then the balance must be carried forward as stock on hand. REC accounts then take on the appearance of trading stock rather than a revenue item.

Discussions with accountants of liable parties have revealed that either the penalties have simply been paid and incurred as a non-deductible expense. Generally parties with power generation facilities of greater than 100MWp are large mining companies who have regarded to annual cost of $80 000 as ‘lunch money’. However rising liabilities and publically produced ‘dirty producers’ lists in newspapers have resulted in a more environmentally aware entities. Public company directors and accountants can no longer dismiss REC compliance as trivial.

It is suggested for liable parties the purchase of RECs therefore be treated as trading stock and balances carried forward accordingly. However discrepancies arise in that the value of RECs varies wildly during the year and from year to year.

[10] Private tax ruling held by A R Fullarton 9th February 2006.

The surrender date (assessment) is set as 14th February of each year. On that date a REC is valued at the after tax value of the penalty rate, for 2010 $65. However as the purchase of a REC is a tax deductible expense, the value is $93 (at 30 per cent company tax rates). A premium could also be incurred for the avoided public embarrassment of being a company liable for a 'pollution tax'.

On 15th February on the other hand the value of the REC must be discounted for the discounted cash rate for 365 days. The current Federal government's policy of issuing 'bonus' RECs to small generators as 'renewable energy' incentives have resulted in an overabundance of RECs available to liable parties. The 'free' RECs entered the economy in 2009 and caused a commensurate reduction in the price of RECs traded. This is very basic economics and requires no further discussion. Of significance is the variable value of RECs.

The value of the REC trading account will vary considerably throughout the year simply through market fluctuations. The number of RECs must be added to the trading account.

The REC trading account therefore takes on the appearance more as a 'livestock trading account' than a standard stock account. Existing Australian Accounting Standards provide for the value of trading stock at year's end and the methods accepted for such flows of stock. However as liable parties surrender RECs rather than sell them, the trading account consists only of 'purchases' and write offs. Once again the appearance is more of a 'livestock trading account' wherein stock dies rather than sold.

That liable parties will seek to produce their own RECs rather than purchase them will occur. Unfortunately Griffin Coal which owned Emu Plains Wind Farm and Collie Coal has gone into liquidation but it is an indication of future expectancies.

The generation of RECs, therefore takes on the nature of 'breeding' and is somewhat akin to 'Natural Increase' disclosed in a livestock trading account. RECs can be purchased and sold by both REC creators and liable parties which results in an accounting requirement to deal with sales and purchases in terms of both numbers and values. Closing stock values can be established in the same manner as livestock are valued by farmers.

It is therefore suggested that the appropriate accounting treatment for the creation, purchase, sale and surrender of RECs be the same as a livestock trading account. It should be termed accordingly i.e. REC Trading Account and that REC creation is used in place of 'natural increase' and REC surrender be used in place of 'deaths and missing'. The numbers of RECs created, purchased, sold and surrendered is treated in the same way and numbers of livestock for valuation purposes. For income tax purposes the closing value is set at the penalty rate applicable to the year in review. Any income tax benefit will result in an increase in net profit if RECs have been purchased below the penalty rate and a reduction in net profit if purchased in excess of the penalty rate.

There will be a 'flow through' effect for RECs purchased between the tax deductible REC purchase expense and the REC shortfall penalty rate. That RECs have an indefinite lifespan permits stock to be carried over until surrender (death) at some later accounting period.

Rises in penalties will reflect in rises in net profits as the value of closing stock increases for taxation purposes.

This suggestion permits a relatively familiar accounting treatment to be applied to a new product and industry as well as readily conforming to existing taxation law. It also permits simply accounting treatment for a market which will vary considerably as the production, trade and consumption of a new commodity. The treatment allows for the artificial creation and consumption of the commodity as governments vary the cost, supply and consumption of Renewable Energy Credits.

This concept is suitable for 'carbon trading' as it exists in Australia. This concept is not to be confused with the concept of a carbon tax which is yet to be introduced and beyond the scope of this paper.

8th April 2010

Appendix 'B'

Submission for a Feed-In Tariff of 'Two-for-One'

Submitted to the State Parliament of Western Australia

21st July 2009

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Preamble:

- Led by a focus on large wind electricity generation systems, a general distrust of the benefits of 'intermittent renewable energy' power producers has been developed by State controlled electricity utilities, which has lead to a situation wherein;

- Western Australia does not have a formal regulated policy of Feed-In Tariffs (FiT's), as do the other States, which in turn has resulted in;

- Western Australia lagging very much behind Australia, and the World generally, in the installation of embedded solar PV systems;

- Given the overwhelming success of the take up of embedded solar PV installations in Carnarvon, which has been encouraged by Horizon Power as a trial in proving the reliability of solar PV in reducing peak power demands; and

- Given that the previously offered Gross Feed-In Tariff of 60 cents per kilowatt hour was economically unsustainable and subsequently withdrawn;

- An economically viable and sustainable FiT is urgently required to be available to every electricity consumer in Western Australia to promote the installation of solar PV electricity generation systems.

Proposal:

This proposal submits a FiT of twice the tariff rate, whatever it may be, to the consumer for every kWh of electricity exported to the grid, after the consumer's consumption, to be paid to the consumer.

Those installations are to be limited to 10kWp per phase to a total of 30kWp per installation. Installations in excess of 30kWp will to be required to undergo a network-impact assessment to establish possible consequences to the grid generally caused by 'intermittent electricity generation'.

The rationale behind this proposal is to encourage consumer orientated contributions to renewable energy production. The impact of growth of embedded solar PV installations will reduce reliance on fossil fuels and their impact on climate change.

The Carnarvon case study demonstrates incidental benefits such as stabilisation of grid electricity quality as well as the efficiency of embedded solar PV installations in reducing reliance on fossil fuels and considerable impact on reducing pollutant gases discharged during traditional combustible generation methods of electricity generation.

Currently 'caps' limiting solar PV installation such as an $7 500 rebate limit and a one-for-one tariff exchange have reduced Western Australia's average solar PV installation from 1.6kWp to 1.2kWp. This is overshadowed by the typical Carnarvon installation of 6.7kWp.

Carnarvon has benefitted from a 50 per cent fossil fuel replacement contribution to capital costs of installation and a co-operative State controlled utility that has permitted automatic approval for solar PV installations to 10kWp per phase (i.e. 30kWp). Installations have now

reached a point wherein they are providing nearly 1% of the town's annual consumption and 1.3% of peak electricity demands. Additional benefits such as grid stability and reduction of power outages have also occurred.

A change in irrigation regimes by a market gardener with a 30kWp installation have also resulted in watering times being altered from over night to throughout the day to take advantage of solar energy production. The change has resulted in plants being watered at their peak growing and production times which is of course that of photosynthesis. Not only has the grower reduced demand on the electricity grid but is producing a superior product. There is also the added benefit of a reduction in the generation of pollutants (he has virtually eliminated his carbon footprint)

The cost of installation of the smaller 1.2kWp solar installations in the South West Integrated Grid (SWIS) has climbed to around $10 per Watt. This is due to certain fixed costs of installation such as wiring, metering and the like. In contrast, the typical Carnarvon installation of 6.7kWp has reduced costs to as low as $7.74 per Watt as economies of scale have resulted due to increased size of the installations.

Due in part to Carnarvon's climate of clear skies and cooler average temperatures, average daily production of a 6.7kWp uniquely 'split array' system is up to 40kWh (units) per day. This is between three to four times that required by the average domestic electricity connection. Businesses with higher consumption demands have been able to install 30kWp solar PV capacities. These are capable of producing up to 180kWh per day and almost entirely eliminating their electricity costs.

During non-business hours, such as weekends and public holidays, these businesses are able to supplement to electricity demands of other consumers. As do the domestic 6.7kWp domestic installations which are offsetting the electricity demands of their neighbours and electricity generation loads on the town's power station.

By providing a 'two-for-one' FiT demands on State revenues are not as significant as the recently withdrawn 60c FiT which was clear unsustainable. Consumers are required to use their own generation in the first instance which offsets peak load demands on fossil fuel generators. The 30kWp limit reduces the likelihood of grid disruptions caused by 'intermittent' electricity generation yet significantly affects individual electricity costs and peak load demands generally.

As the consumer benefits from contributions to the electricity grid by a factor of two for one for excess energy exported to the grid, the consumer is therefore encouraged to conserve electricity demands and the need for energy conservation remains. This discourages waste from excess electricity production being needlessly expanded on site.

The State not only saves by way of generation costs but also by reduced electricity demands on the grid generally. The 'two-for-one' FiT is offset by the sale of electricity to other consumers of electricity that the Utility has not had to generate. This ensures sustainability of the proposal.

An accounting example based on an existing solar PV installation of an enterprise with a 30kWp solar PV installation in Carnarvon is as follows:

Annual consumption (from exiting consumption data over several years)	= 180kWp x 5.5 x 52 = **51 480kWh**
Annual solar PV electricity generation	= 30kWp x 1.622MWh/pa = **48 660kWh**

Though the consumer is in a net consumption position of 2 820kWh or $517[11] pa (down from $9 430) there is an accounting function based on the weekly export and import of electricity.

For five and a half days of trading the customer is generally using all of his solar produced electricity. (nil export but a saving in generation costs to the utility)

For one and a half days (closed business daylight hours) grid exports of

270 kWh @ 36.64c/kWh = $98.93

Annual cost to the utility **$ 5 144** less the saving of generation costs of 48 660 kWh of around 13c/kWh = **$6 326**.

Despite the consumer obtaining a net cash benefit of **$4 627** being his net sale of electricity exported to the grid less electricity purchased (he has also saved the cost of electricity otherwise purchased of $9 431 giving him a total return of $14 058 on his $232 200 investment or 6 per cent, a competitive rate of return) the utility has saved $6 326 on generation costs plus the sale of that electricity to other consumers of at least **$7 790**.[12]

This proposal results in an attractive rate of return to consumers' thus stimulating installation of solar PV generation systems. It reduces reliance on fossil fuel electricity generation and the resultant pollutant effects and does not place an onerous burden on State revenues. Indeed the State benefits from cost savings.

The proposal has the added benefits of not requiring changes to existing accounting and billing systems nor does it require amendments for varying tariffs or tariff changes.

[11] Based on the current L2 tariff rate of 18.32 cents/kWh.

[12] Based on the current A2 tariff rate of 16.00 cents/kWh.