

Marianne Lourey  
Energy Division  
Victorian Government Department of Primary Industries  
GPO Box 4440  
Melbourne Vic 3001



15 January 2008

Dear Marianne Lourey,

**Clean Energy Council submission to the Victorian Government Department of Primary Industry on 2<sup>nd</sup> Stage of Feed-in Tariffs for small-scale renewable generation**

Following up on our meeting with yourself and Minister Batchelor on 15 November 2007, please find attached the Clean Energy Council submission outlining our suggested model for the 2<sup>nd</sup> stage of the Victorian feed-in tariff regime and its rationale.

For the government to deliver a demonstrable and timely improvement in the price paid for electricity generated by solar PV will require further legislative changes on feed-in tariffs that go well beyond what has been done to date. The Clean Energy Council looks forward to working with the Victorian Government on its 2<sup>nd</sup> stage of feed-in tariffs that will deliver on the Government's November 2006 election commitment in both form and spirit. If you have any questions or issues regarding this submission that you wish to discuss please do not hesitate to contact Sarah Morton via phone: 9929 4113 or e-mail: [sarah@cleanenergycouncil.org.au](mailto:sarah@cleanenergycouncil.org.au) .

Yours sincerely

***Original signed by***

Dominique LaFontaine  
**Chief Executive Officer**

## Clean Energy Council

# Submission on Victorian 2<sup>nd</sup> Stage Reforms to Feed-in Tariffs for Small Scale Renewable Generation

**January 2008**



*Clean Energy Council*

***Clean Energy Council***

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**To deliver on the intent of the Government's November election commitment on feed-in tariffs requires further changes beyond the Energy Legislation Amendment Bill 2007**

During the November 2006 Victorian election, the government in its climate policy statement "*Tackling Climate Change*" made an election commitment that implied it would substantially improve the rate paid for electricity generated by small scale renewable energy systems, thereby encouraging greater uptake of these systems. The policy statement recognised that:

- Solar PV systems made an important contribution to greenhouse gas emissions reduction, expanding the energy network capacity and reducing the need for more peaking power stations
- Solar PV energy, which is produced at peak times of the day, is worth more than the average rate paid across the entire day, and that
- The production of this energy should be rewarded accordingly, and that to do so would encourage the increased take-up of solar power.

The statement said,

*Solar power on a home can produce energy at the peak times of day when market prices are higher. Labor will ensure that families feeding power back into the grid at these peak times will be rewarded accordingly.*

*A fair market price set by the Essential Service Commission will provide an incentive for installation of small scale renewables such as solar, mini-hydro and wind power to strengthen the overall grid.*

The Clean Energy Council is of the view that the initial amendments on setting a fair price for renewable energy plants less than 100kW (unveiled in June 2007) will involve little change to what is already offered by electricity retailers. The Clean Energy Council survey of electricity retailers conducted in the middle of 2007 found that almost all major retailers in Victoria (and indeed Australia) already provide a one-for-one buyback arrangement for electricity generated from small household systems. The survey results are provided in Attachment A. For the Victorian Government to achieve its aim of improving the attractiveness of small scale renewable generators for households and small business it will need to undertake a 2<sup>nd</sup> stage of legislative changes.

We expect that such legislation will build and improve on what other state and territory governments are initiating in this area. The South Australian Government has recently introduced legislation to enact a feed-in tariff for small solar power systems of 44c/kWh over 5 years based on net metering for residential systems. An Amendment Bill to extend this proposal to 20 years and to extend eligibility to businesses (with up to twenty employees) also has passed the upper house. While we welcome the commitment of the South Australian Government, this legislation – even with the above amendments - does not provide an adequate financial incentive for solar PV investment. In the ACT, a Draft Exposure has been introduced into Parliament, which signals the intention to enact a feed-in tariff for renewable energy systems of up to 3.88 times the retail rate, based on gross production metering (i.e. metering the entire energy production of the system) with no limit on eligibility.

We should emphasise that Victorian electricity market regulatory reforms (such as the roll-out of interval meters and the plans to move towards a total factor productivity model of regulation for electricity distribution service providers (DNSPs)), while welcome, will not provide any kind of improvement in the environment for small scale renewable generation for many years and are subject to high levels of uncertainty. The roll out of interval meters will not be complete until towards the end of 2012, with 40% of customers (with consumption below 160MWh per annum) still without these meters by the beginning of 2012. Then there are likely to be further delays before this flows through to consumers, as it will take time for retailers to develop new pricing products and for consumers to become aware of them and adopt them at a widespread level. Furthermore, interval meters will lack in-house display functionality which will further inhibit customer understanding and responsiveness to new time-of-use tariff offerings. In terms of reforming the regulation of NSPs so that network pricing

better reflects costs, there is no definite commitment from the government that it will adopt a total factor productivity model. Plus there are some extra uncertainties with the hand over of regulatory responsibilities to a national regulator. Even if a total factor productivity regulatory system were adopted, it will be many years until this is phased in (over the 2010-2015 period) and further delays until this flows through to pricing seen by small electricity consumers.

On this point it is worth remembering the unfulfilled promises that there would be environmental benefits from the energy market reforms of the mid to late 1990's. It was expected that these reforms would encourage greater use of gas fired generation, co-generation, energy efficiency and consequently substantial greenhouse emissions abatement. Projections prepared for the Australian Greenhouse Office in 2000 estimated that it would deliver abatement of 17.2m tonnes of CO<sub>2</sub> by 2020. However in reality energy market reform led to an increase in greenhouse emissions as Victorian brown coal generators increased market share over other less greenhouse intensive generators. By 2005 the AGO observed, *"it is difficult to conclude whether overall EMR is associated with higher or lower emissions even out to 2020"*. The AGO also stated, *"EMR (Energy Market Reform) has also in fact not led to significant increases in co-generation"*<sup>1</sup>.

Considering the considerable time lags out to 2015 and uncertainty surrounding plans for more cost reflective electricity market pricing arrangements, the Clean Energy Council is sceptical about the benefits these changes will deliver for small scale renewables in the immediate term. To deliver a more certain and timely outcome on fair prices for small scale renewables, which goes beyond business as usual, the Victorian Government needs to legislate feed-in tariffs which go beyond simply a one-for-one arrangement.

### **Feed-in tariffs for Solar PV involve the achievement of multiple objectives**

There is considerable experience that now exists on the use and benefits of feed-in tariffs as a policy mechanism for developing low emission technologies and associated industries. The logic behind a feed-in tariff for solar PV is not that it provides low cost abatement today, but rather that it is important to ultimate long-term abatement task required to avoid dangerous climate change and should help to foster domestic industries that will support high income employment in the future. This logic is based on a dynamic view of addressing greenhouse emissions that recognises it is a process that will build up over time and is subject to learning. This is different to a static view that only looks at what is most cost effective today irrespective of developments likely to take place in the future. In addition there are a number of imperfections in the electricity market that fail to adequately recognise the benefits of generation located at the point of demand and scaled to that demand.

The key points elaborated in this submission are:

- Responding to climate change requires a major shift in the emissions intensity of our electricity to almost zero. Solar PV will be essential to this effort as it faces no energy resource limits and per unit of energy generated requires the lowest amount of land area compared to other renewable energy technologies.
- To achieve large scale deployment of solar PV in the most cost effective way we will need to drive significant cost reductions in the medium term. Cost reductions can be accelerated by technological development through deploying solar PV at increasing scale *now*. This will ensure that in the decades to come - as the required abatement task becomes much larger - solar PV will be available at an affordable cost.
- The increased deployment required now to achieve these cost reductions will be driven by improving the payback period of solar PV - thereby attracting a wider market.

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<sup>1</sup> Australian Greenhouse Office (2005) *Stationary Energy Sector Greenhouse Gas Emissions Projections 2005*, Australian Government 2005.

- Recognising the true value of solar PV in terms of reduced peak demand and network infrastructure and pricing it accordingly will significantly improve its payback period.
- Growing a strong solar PV industry is a significant economic opportunity for Australia.
- In the interim period until energy market reform achieves an adequate pricing scenario for solar PV, feed-in tariffs are required to correct the current perverse subsidies in the marketplace - to drive solar PV deployment, market experience and cost reductions.

### ***International experience***

Feed-in tariffs are an approach whereby legislated premium buy-back rates are set by the government for generation produced by each technology. Overseas, these buy-back rates have generally been set to decline each year consistent with learning curve theory, forcing producers to achieve cost-reductions if their technology is to continue to be viable. In contrast to market based mechanisms the price for the power is set, and this determines deployment, rather than determining the target market share which then sets the price. This model has a number of advantages over market measure targets, in particular reducing risk and uncertainty – creating a stable investment climate - and more readily providing support to a broader range of technologies.

The Stern Review found that in comparison to market-based measures:

*“feed-in mechanisms achieve larger [renewable energy] deployment at lower costs. Central to this is the assurance of long term price guarantees...uncertainty discourages investment and increases the cost of capital as the risks associated with the uncertain rewards require greater rewards”.*<sup>2</sup>

The US was the first country to implement a feed-in tariff, but it has been Europe where the policy has taken off and seen feed-in tariffs become the most popular policy mechanism globally to drive renewable energy deployment. As of 2007, feed-in tariffs were utilised in 18 EU member countries, as well as numerous other countries including Brazil, India, Israel, Korea, Nicaragua, Norway, Sri Lanka, Switzerland, and Turkey<sup>3</sup>. Between 1990-2005 Denmark, Germany and Spain, which each had feed-in tariff policies for wind, installed over half of the global total of wind capacity installed during that period.<sup>4</sup>

In particular, feed-in tariffs have become the most successful form of policy support for solar PV. Germany and Spain, which each have feed-in policies, were in the top five countries for investment in solar PV in 2005. These countries have also attracted the majority of European investment in solar cell production facilities since 1999.<sup>5</sup>

In Germany, the feed-in tariff has been particularly successful. While the 100,000 rooftop program enhanced the volume of installations it was the feed-in and the later optimisation of its rate that really brought on a massive up-scale in the market, as can be seen in Figure 1 below.

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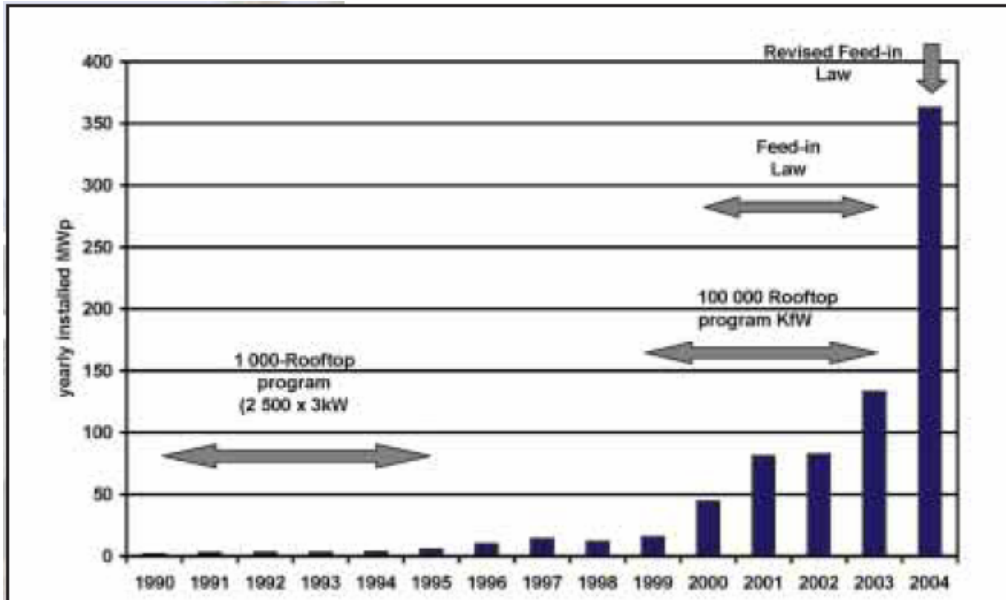
<sup>2</sup> Stern, N Sir (2006) Stern Review: The Economics of Climate Change, available from [www.sternreview.org.uk](http://www.sternreview.org.uk)

<sup>3</sup> Rickerson, W. and Grace R.C (2007) The Debate over Fixed Price incentives for Renewable Electricity in Europe and the United States: Fallout and Future Directions. A White Paper, prepared for the Heinrich Boell Foundation.

<sup>4</sup> Rickerson, W. and Grace R.C (2007) The Debate over Fixed Price incentives for Renewable Electricity in Europe and the United States: Fallout and Future Directions. A White Paper, prepared for the Heinrich Boell Foundation

<sup>5</sup> European Photovoltaic Industry Association. *European PV Associations' Position Paper on a Feed-in tariff for photovoltaic solar electricity.*

Figure 1 - Market pull by the 100,000 Rooftop Programme and Feed-in tariff in Germany<sup>6</sup>



**Responding to climate change requires a major shift in the emissions intensity of our electricity. Solar PV will be integral to the renewable energy mix which is essential to this effort.**

The UK Government’s Stern Review on the Economics of Climate Change recommended that in order to contain the risks of dangerous climate change to tolerable levels and avoid catastrophic events, we need to limit greenhouse gas concentrations to between 450 and 550 ppm CO<sub>2</sub>-e<sup>7</sup>.

According to the Review, in order to do this:

*“By 2050, global emissions would need to be around 25% below current levels. These cuts will have to be made in the context of a world economy in 2050 that may be 3-4 times larger than today – so emissions per unit of GDP would need to be just one quarter of current levels by 2050. The power sector around the world will have to be at least 60%, and perhaps as much as 75%, decarbonised by 2050 to stabilise at or below 550ppm CO<sub>2</sub>-e.”*

To achieve the reduction in emissions required, we must maximise the potential of all the renewable energy technologies at our disposal. Former Environment Minister Malcolm Turnbull recognised the necessity for renewable energy in this context:

*“I mean, the thing that a lot of people overlook is that in order to get to the massive reductions in greenhouse gas emissions by mid century we are talking about having to have all of our electricity, or almost all of it and almost all of our transport energy, coming from zero emission sources. If we can’t do that we will not be able to meet the massive reductions in greenhouse gases the world needs.”*

(Sky News)

The Stern Review notes that constraints acting on individual technologies and energy security issues mean that a portfolio will be required to achieve reductions at the scale required. There is an option

<sup>6</sup> European Photovoltaic Industry Association. *European PV Associations’ Position Paper on a Feed-in tariff for photovoltaic solar electricity.*

<sup>7</sup> Sir Nicholas Stern (2006) *Stern Review: The Economics of Climate Change*, available from [www.sternreview.org.uk](http://www.sternreview.org.uk)

value to developing alternatives as it enables greater and potentially less costly abatement in the future. The introduction of new options makes the marginal abatement curve more elastic.

Early development of economically viable alternatives also avoids the problem of 'locking in' high carbon capital stock for decades, which would also increase future marginal abatement costs. Policies to encourage low-emission technologies can be seen as a hedge against the risk of high abatement costs. Developing options involves paying the learning cost for more technologies. But policymakers should also bear in mind links to other policy objectives. A greater diversity in sources of energy, for instance, will tend to provide benefits to security of supply, as well as climate change. There is thus a type of externality from creating a new option in terms of risk reduction as well as potential cost reduction. Firms by themselves do not have the same perspective and weight on these criteria as broader society.

This means that large scale deployment of solar PV will be an absolutely essential part of the renewable energy technology mix required to meet this challenge. Socolow and Pacala, the originators of the wedges abatement concept identify Solar PV as one of the critical technologies for delivering an abatement wedge stating that,

*"For a renewable energy technology, land demands for PV are relatively low because the efficiency of conversion of sunlight to PV is relatively high: An entire wedge of PV electricity will require an estimated two million hectares (the area of New Jersey). Some of this area can be supplied by the roofs and walls of buildings. The only technology comparable in efficiency of conversion of sunlight is the solar engine running on high-temperature heat, produced by a solar concentrator (a focusing trough or dish)."*

**To achieve large scale deployment of solar PV in the most cost effective way we will need to drive significant cost reductions in the medium term. Cost reductions can be accelerated by driving technological development and local market supply chain efficiencies through deploying solar PV at increasing scale now. This will ensure the costs imposed when the scale of abatement increases in the future are affordable.**

If we are to successfully address the problem of dangerous climate change, it is important that development of near zero emission technologies such as Solar PV is accelerated to bring down their costs, improve their performance and reliability, and to learn about how to best integrate these technologies within a wider technological and social system. The Stern Review noted that, *"The urgency of the problem means that technology development may not be able to wait for robust global carbon pricing. Without appropriate incentives private firms and capital markets are less likely to invest in developing low-emission technologies."*

Research and development is an important aspect in achieving these improvements but typically energy generation technologies do not emerge out of a lab technologically mature and commercially competitive. Developers and the customers who use the technologies still need to gain field experience with them and the larger the volumes of product deployed the more they learn and consequently the better they get at using and producing the product.

In energy generation technologies, learning by doing, the concept pioneered by economics Nobel Laureate Kenneth Arrow, plays an incredibly important role in achieving improvements in cost and performance. From the cost perspective, the theory of learning by doing suggests that technology costs will fall as experience with a technology grows. In his seminal paper, Arrow<sup>8</sup> shows that if the productivity of capital is an increasing function of the level of cumulative investment because of learning, then individual firms will under invest in capital because they do not internalize the larger social gains from learning.

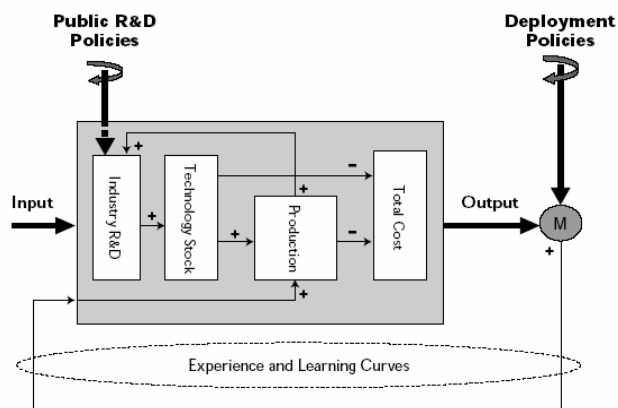
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<sup>8</sup> Arrow, Kenneth. 1962. The Economic Implications of Learning-by-Doing. *Review of Economic Studies* 29: 155–73

The International Energy Agency (IEA) has examined this issue of learning by doing and experience curves and their implications for climate change policy in two publications, *Experience Curves for Energy Technology Policy* and *Creating Markets for Energy Technologies*. They note that there are two effects that come about from government energy technology deployment programs. The immediate physical effect, which may be reduced energy use for the same service or reduced greenhouse emissions are the primary rationale for government intervention. But they note, *“in many instances that view is too narrow; it neglects the importance of the link between deployment programmes and private sector decisions to invest in the market learning process.”* This learning effect is the 2<sup>nd</sup> outcome from government deployment programs.

The IEA provides a model for the learning system<sup>9</sup> (Figure 2) which illustrates how R&D, learning and volume of production are integrally linked in a virtuous cycle. According to the IEA government support encourages corporations to try out new technologies in genuine market settings. The two vertical arrows represent the encouragement for industry R&D and production with a new technology brought about by government policies. Expanded output and sales stimulate the ‘plus’ cycle in the diagram: industry R&D increases further, which enhances the technology stock, which in turn further stimulates production. The production increases also stimulate the learning process and the ‘minus’ cycle in the diagram, resulting in reductions in the cost of production. This further stimulates sales and the cycle reinforces itself. The figure also indicates the role of experience and learning curves which provide a quantitative measure of market learning and the efficiency of the feed-back from market experience (“M”) to production and industry R&D, which leads to cost reductions and improved technology.

**Figure 2 - Influences on the learning system from public policies**



Through this process the learning effect manifests itself in succeeding generations of the technology, with associated reductions in product prices, better technical performance and improved or innovative methods of marketing and application. The technology may become attractive to additional suppliers and products produced with it will account for larger and larger segments of the market, thereby increasing the physical effects of deployment.

The IEA points out the implications of this principle for government policy, *“it is important to emphasise that while public sector R&D is important, it cannot directly bring about the cost reductions that will make the new technology competitive in the marketplace. The outstanding feature of this internal learning process is that there is no virtuous cycle and no substantial cost reductions without market interactions. Thus to provide a payoff, the results of public R&D have to enter into the internal industry R&D process. This constitutes a powerful argument in favour of*

<sup>9</sup> Mel Kliman (2003) *Creating Markets for Energy Technologies*, International Energy Agency. Available from [http://www.iea.org/Textbase/publications/free\\_new\\_Desc.asp?PUBS\\_ID=1100](http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1100)

*government support for technology deployment – if government is supporting research, it should also be supporting deployment.”<sup>10</sup>*

Solar PV is a critical technology to the long term abatement task. Deployment policies implemented now should be seen as investments for developing an important option for the future that lowers risk and future costs.

***Solar PV already has a strong record of cost reductions over time and this is expected to continue***

Solar PV has a strong track record of cost reductions over time. The European Commission (EC), in their recent *Communication from the Commission to the Council and the European Parliament* on the Renewable Energy Roadmap, reported that photovoltaic systems are more than 60 per cent cheaper today than they were in 1990.

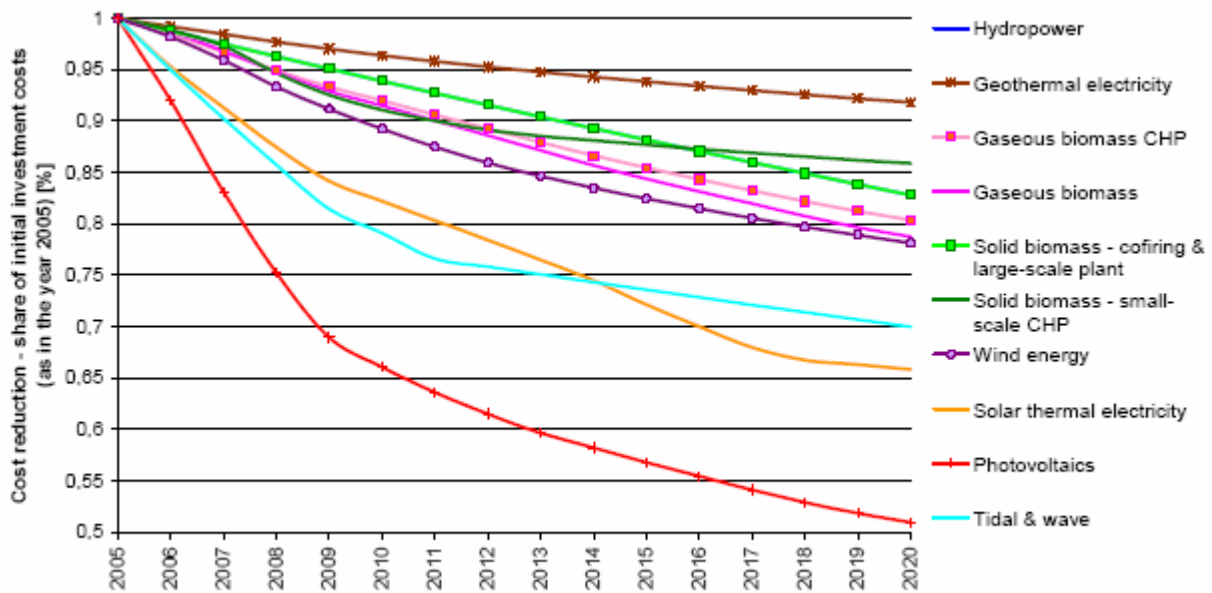
The Communication provides a brief overview on the current contribution made by renewable energy in the European Union (EU). It looks at the EU's target of 20 per cent renewable energy share of gross inland consumption by 2020, how this could be achieved and what the impact of achieving the target would be. Modelling undertaken for the Commission in the development of their 20 per cent by 2020 target for renewable energy looks at how the concept of learning by doing impacts on costs going forward:

*“These cost estimates take into account the fact that the unit costs of renewable energy, like other innovative technologies, tend to fall over time as practitioners gain experience. If the volume of use of a particular technology grows more rapidly, experience will be gained more rapidly and costs will fall more rapidly.”* The modelling forecasts that under a scenario of meeting this target with “similar efforts across each sector and across technologies”, there will be continuing cost reductions for all renewable technologies except hydro power out to 2020. In particular, the cost of solar PV is likely to fall by 50 per cent between 2005 and 2020. See Figure 3 below, (extracted from the *Commission Staff Working Document* accompanying the ‘Communication’ document) which depicts these estimated rates of unit cost reduction for each of the different renewable generation technologies between 2005 to 2020.

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<sup>10</sup> Mel Kliman (2003) *Creating Markets for Energy Technologies*, International Energy Agency. Available from [http://www.iea.org/Textbase/publications/free\\_new\\_Desc.asp?PUBS\\_ID=1100](http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1100)

**Figure 3 - Estimated rate of unit cost reduction for renewable electricity generation technologies** *Source: European Commission*



**The increased deployment required now to achieve these cost reductions will be driven by improving the payback period of solar PV - thereby attracting a wider market.**

Currently, standard industry practice in Australia by electricity retailers is an offer to buy-back solar electricity fed into the grid at a rate of '1 for 1' for residential systems. That is, a retailer will pay the customer the same rate for electricity fed into the grid as the customer pays for electricity which they consume, less the GST.

All the major retailers already offer '1 for 1' buy-back to residential customers in at least one distribution network area, and more commonly, in multiple areas. The up-shot of this is that nearly all residential customers should have access to one or more offers to buy-back their solar energy.

Currently a 1kW residential solar PV system in Victoria will never pay itself back. The system owner is even further out of pocket if they install a system of 1.6kW which is currently the average size.

This is based on the following parameters for residential systems:

- a price of approximately \$13,000 per kW (for small systems of 1 - 2kW)
- the re-introduced \$8,000 rebate (capped at 1 kW)
- the up-front creation and sale of all eligible Renewable Energy Certificates (RECs) – 15 years worth of deemed RECs, at \$35 per REC (\$620-720 per kW, depending on location)
- a '1 for 1' energy buy-back contract with a retailer
- a discount rate of 8% and CPI of 3%

The situation for commercial system owners is even worse, as they do not have access to the \$8,000 rebate and may also not have access to a '1 for 1' buy-back offer, which means the system owner is out of pocket for nearly the entire system price.

## **Recognising the true value of solar PV and pricing it accordingly will significantly improve its payback period.**

Currently, owners of PV systems are not adequately remunerated for the true value of their systems to the market – neither for the value of the energy, nor for the demand management benefits to the network that the system provides.

Indeed, this was recognised in the Victorian Government's policy statement *Tackling Climate Change*:  
“Solar power on a home can produce energy at the peak times of day when market prices are higher. Labor will ensure that families feeding power back into the grid at these peak times will be rewarded accordingly.”

### **Correctly valuing electricity produced by solar PV**

Solar PV panels generate electricity during daylight hours only and generate more electricity when the sun is shining intensely. In a summer peaking system such as Victoria, this means that solar PV energy production is disproportionately higher during times when system demand and the value of electricity is high. However residential customers are billed on a flat per kWh rate which is a highly averaged cost of production that does not reflect the true time-varying value, or locational value, of that electricity. The true value of a unit of electricity at a given time and location can be vastly different from the average value. Under a current one-for-one feed-in contract, the PV owner receives this same retail rate for their exported solar PV electricity as they pay for their imported electricity. Hence the wholesale rate (as a part of the retail rate) that solar PV electricity receives under such a system will tend to undervalue the energy and under-compensate the PV owner.

The question is, by how much is solar PV electricity undervalued in this system? Unfortunately, we are not aware of a comprehensive assessment based on the Australian market. However, such assessments have taken place for solar PV electricity in other markets, such as the Californian energy market, which is also a summer peaking system. Borenstein, at the University of California Energy Institute, found that “*the most credible long-run valuation of solar PV power is 29-48 per cent greater than results from valuation at a flat-rate tariff, depending on the location of the PV panels*”<sup>11</sup>.

### **Correctly valuing the network benefits of solar PV**

Managing peak demand growth is a costly challenge for the Victorian electricity market. Victoria's electricity network is facing high growth in peak demand over the coming years, with household air-conditioner ownership growing rapidly. There was over 900 MW of native peak demand growth expected over the 5 years from 2006, with peak demand projected to continue to grow beyond that<sup>12</sup>. Hence demand management will be a continuing and increasingly important issue for the state.

Servicing networks to meet peak demand has a very high marginal cost. Around \$3.5 billion in capital expenditure on transmission and distribution infrastructure in Victoria is planned over the current 5 year planning period. A rough calculation of this planned expenditure compared to the predicted 900 MW increase in peak demand amounts to spending of \$3,900 per kW. (Though, in practice not all of this expenditure is dedicated to network augmentation.) In Queensland, the State Government has estimated that for each installed 3kW air-conditioner, it costs the electricity market another \$13,000 worth of public investment in electricity infrastructure to meet that load.<sup>13</sup>

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<sup>11</sup> Borenstein, S. (2005) *Valuing the time-varying electricity production of solar photovoltaic cells*. Center for the Study of Energy Markets Working Paper Series.

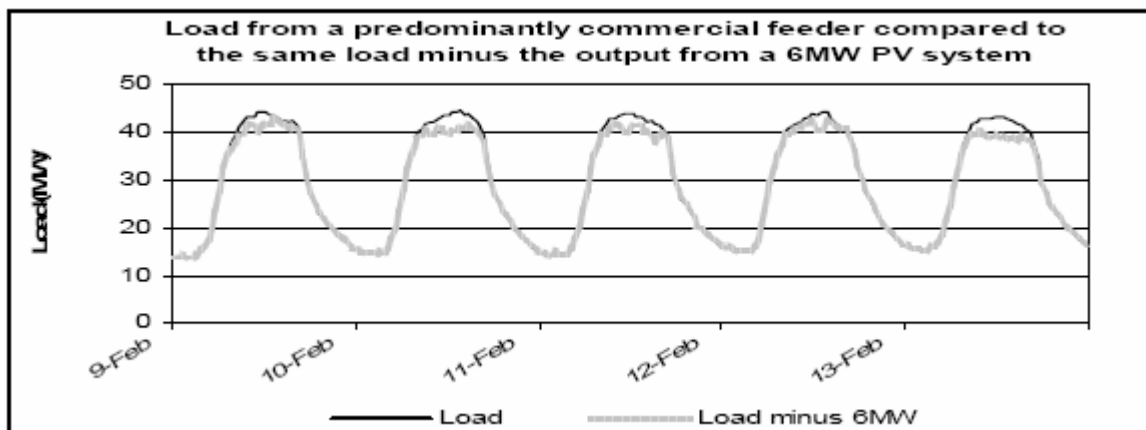
<sup>12</sup> National Electricity Market Management Company (2006) *Statement of Opportunities for the National Electricity Market*, NEMMCO Ltd.

<sup>13</sup> *Transcript of Proceedings, Productivity Commission Inquiry into Energy Efficiency, 17 Sept, 2004* (2004) Spark and Cannon

**Solar PV can make an important contribution to the network through helping to manage the peak demand growth**

Solar PV is embedded generation, producing electricity in our urban environment where it is needed the most, reducing energy losses and also reducing the need for expensive augmentation of network infrastructure. Most importantly, solar PV energy is produced when demand is at its peak, during the middle of the day, and in particular during summer. The production of solar PV is a reasonably good match with the demand profile of the Victorian network. Solar PV therefore has significant potential for useful contribution to reduction of peak summer demand. Figure 4 below shows the match between PV Output and the load on a predominantly commercial feeder in NSW during a peak load week in the 2003/04 summer.

**Figure 4 - Potential PV contribution to NSW commercial load during periods of peak demand<sup>14</sup>**



Extending eligibility for a feed-in tariff scheme such as that proposed, to small business customers, could capture and maximise these network benefits.

**Average retail prices are not an accurate reflection of the value of PV to the network**

Similarly to the wholesale price for electricity, network service charges paid by small customers (within the retail electricity price) are also based on an average cost rather than dynamic time-of-use network costs. These prices fail to indicate to the customer the real network cost of their electricity load. As for wholesale prices, the very high marginal cost of peak demand to the network is also much higher than the heavily averaged flat customer charges, levied on each unit of electricity consumed, regardless of whether this is during peak or off-peak periods. This means that during periods of peak demand, the electricity network charges paid by customers are typically greatly under priced.

These same network charges, which are under priced during peak periods, are those that are embedded in the retail rate earned by solar PV owners under a '1 for 1' contract, for their contribution to peak demand management and avoided network investment. Hence, solar PV generation which provides embedded energy during high demand periods, is significantly under-compensated for the network costs it avoids as well as for its generation. These market failures have led to inefficient investment decisions - overinvestment in networks and underinvestment in distributed energy solutions such as solar PV and energy efficiency as recognised in the Commonwealth's 2004 Energy White Paper, which noted, "Current electricity market arrangements do not appropriately reward these benefits of solar technologies, nor do they provide appropriate price signals for energy efficiency."

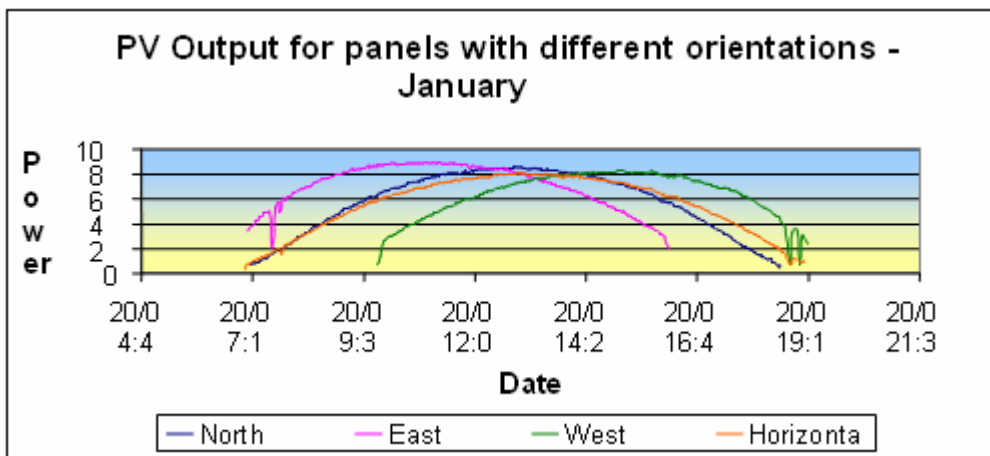
<sup>14</sup> Watt, M et al (2005) *Analyses of Photovoltaic System Output, Temperature, Electricity Loads and National Electricity Market Prices – Summer 2003-04*, Centre for Photovoltaic Engineering, University of NSW

This is where a well-designed feed-in tariff could contribute to a correction of these market failures, moving towards adequately compensating the PV owner for these currently economically unrecognised benefits of solar power. Such a scheme would complement the industry development objectives of the federal government's rebate scheme, and in reality would also support industry development. Ideally, energy market reform will eventually lead to time-of-use (and locational) retail pricing which is able to adequately signal the real underlying costs of the energy. But this will not become a reality until many years into the future.

**Further improving the match of PV output to demand**

There are also other options to further improve the match of PV output to system demand, such as orienting the PV panels slightly towards the west. Figure 5 below shows how orientation of panels towards the west can make a significant impact on the output profile of the system, shifting the peak output towards the mid-afternoon.

**Figure 5 - PV Output for panels at different orientations, Sydney summer 2003-04<sup>15</sup>**



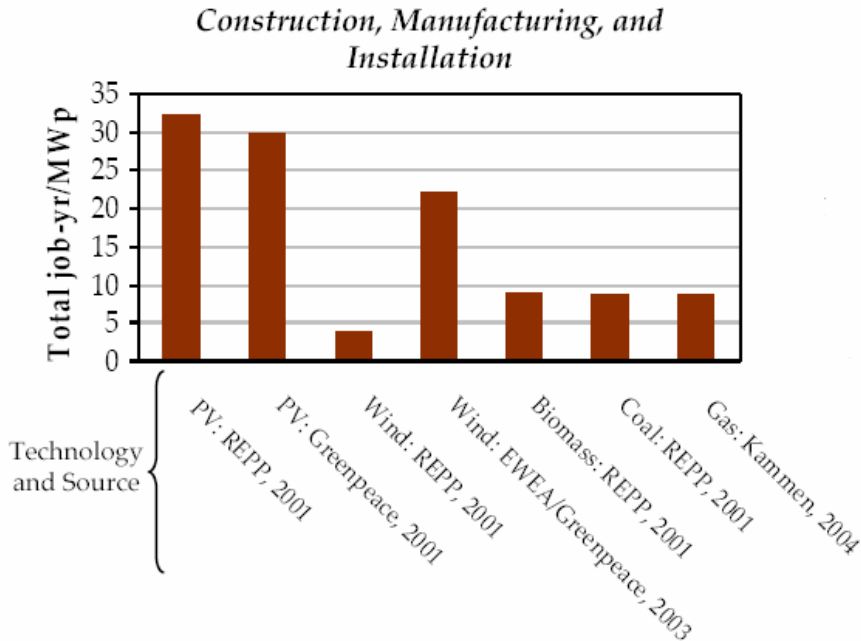
It may be worthwhile to consider a consistent approach of orienting systems slightly towards the west to improve this match. However, this will slightly reduce the overall generation from the system and hence the value to the solar PV owner - 24 per cent less electricity for a west facing array compared with a north facing one in the above study by Naughton - and so such a policy would need careful consideration.

<sup>15</sup> Naughton, D. (2005) *Potential for Photovoltaics to Reduce Peak Demand at the University of NSW*, Taste of Summer Research Report, Centre for PV Engineering UNSW.

**Growing a strong solar PV industry is a significant economic opportunity for Australia.**

Those with the market develop the industry. Solar PV investment provides a very strong employment stimulus per installed capacity, as can be seen in Figure 6 which shows that solar PV creates 30 job years per MW of installed capacity.

**Figure 6 - Job creation by technology**



Source: Navigant Consulting, Survey of predicted and actual renewable energy job creation (2007)

The solar PV industry is already delivering jobs and investment for Victoria and Australia. According to the 2006 National Survey Report of PV Power Applications in Australia, the PV industry supported 1440 direct jobs around Australia in that year. It has also been conservatively estimated that in 2004 the industry generated approximately 2300 indirect jobs through its economic stimulus. Yet this is only a small fraction of the potential for employment creation within this industry. Australia only had 9.7MW of installations in that year, compared with Germany’s market size of more than 600MW installed during 2005 - a country which has a significantly lower solar resource than Victoria.

Approximately one quarter of total global investment in renewable energy capacity in 2005, was in solar PV. That’s nearly \$10 billion invested in solar PV alone. In addition to capacity investment, an estimated another \$6 billion was invested in new solar PV manufacturing plant and equipment.

There is the capacity for Australia, and in particular Victoria, to claim a much larger share in this booming industry, which is one of the world’s fastest growing industries. By growing the market, a well designed feed-in tariff would also have positive industry development spin-offs. The impact of increased demand will strengthen and expand the current Victorian workforce of small businesses retailing, distributing, designing and installing solar PV systems. In addition, the expanded market will help to drive economies of scale within this local market.

## The Clean Energy Council's proposed Feed-in Tariff model

It is clear that to achieve a sizable expansion to the market for solar PV in Victoria, a feed-in tariff is required, however – what should such a scheme look like?

A recent study on feed-in tariff best practices based on an international review of existing schemes, concluded that successful feed-in tariffs have, among other attributes:

- long-term guaranteed payments that adequately reflect generation costs and profit
- incentive levels specific to certain technologies
- incentive levels that are tailored to achieve specific policy goals, and
- incentive levels that decrease over time.<sup>16</sup>

The European Photovoltaic Industry Association (EPIA), in their Position Paper concurs with these points, and further specifies some specific design attributes of policies that these requirements translate into. These are that the feed-in policy must include, among other factors:

- long-term contracts (15-20 years), and
- guaranteed price that offers reasonable rates of return, easing access to financing sources due to clear payback periods.

The Clean Energy Council has taken each of the above recommendations in account in proposing its recommended feed-in tariff for Victoria, to ensure the growth of a thriving solar PV industry in Victoria, which would put it at the forefront of the Australian PV market.

### Clean Energy Council recommendation for a Victorian Feed-in Tariff

#### FOR RESIDENTIAL SYSTEMS

- a minimum feed-in rate of 60c/kWh
- metering based on gross production\*
- guaranteed for at least 15 years

#### FOR COMMERCIAL SYSTEMS

- a feed-in tariff to ensure payback within 15 years
- metering based on gross production\*
- also guaranteed for at least 15 years

*\* Note: Gross production metering is where owners receive the premium tariff for all electricity produced by their PV systems (referred to as 'gross production') and pay full retail price for all of their household consumption. Net metering is where the 'net export' of electricity from the connection point of a PV owning customer is metered. Under this system feed-in payments are made based on the electricity returned to the grid after household consumption at that time.*

The above feed-in tariff is based on ensuring a well-defined, clear scheme that will provide stability and certainty of payback within a reasonable period, for both residential and commercial systems.

The rationale behind these design features are elaborated in the headings below.

<sup>16</sup> Klein, A., Held, A., Ragwitz, M., Resch, G. and Faber, T. (2007) *Evaluation of different feed-in design options: Best practice paper for the International Feed-in Cooperation*. Karlsruhe, Germany and Laxenburg, Austria: Fraunhofer Institut fuer Systemtechnik and Innovationsforschung and Vienna University of Technology Energy Economics Group.

**This scheme would provide a financial payback that would trigger critical thresholds for increased uptake of solar PV systems beyond business as usual markets.**

The rate of 60c/kWh is proposed by the Clean Energy Council, as this would, in combination with the Commonwealth Government's \$8,000 rebate (for those that are eligible), see a pay-back period of 20 years for those investing in a 1.6kW system - approximately the average sized system currently being installed<sup>17</sup>. According to feedback from our members, satisfying this 20 year payback threshold is a critical trigger that will substantially expand the number of household customers who will install solar PV systems and enable solar PV to break into new customer segments.

Some people may well point out that in the past the public has invested in solar power anyway, regardless of poor payback periods and so, given that, why is payback so important? It is true that historically customers have generally made their decisions to purchase PV systems with economic criteria playing some role, but given the poor economics of investing in these systems have probably been primarily led by environment criteria. However, the purpose of a feed-in tariff is to expand the marketplace for solar PV away from just these 'early-adopters' to a much a larger marketplace of people for whom the economics of the system investment will be a more important factor within the purchase decision. Indeed we have seen the re-instatement of the federal rebate of up to \$8,000 per system has created a surge in demand for solar PV into a new section of the community.

In terms of businesses a payback period of 15 years appears to be a critical threshold to trigger sales in this segment according to our members' experience. This is by no means a highly lucrative investment for businesses, but appears to be sufficient to trigger a purchase when combined with other reputational benefits that flow from ownership of solar PV systems. However the reputational benefits in absence of a 15 year payback are insufficient on their own to induce businesses to install solar PV systems.

Because of the substantial variation in the size of commercial sector systems, there isn't a cents per kWh rate that can be generically applied that could be expected to deliver a 15 year payback. This is because as systems become larger their cost per kW of capacity declines. Thus to provide a consistent 15 year payback feed-in rates for the commercial sector need to be scaled to system size.

**To maximise the success of the feed-in scheme requires gross metering**

***Gross metering is equitable – net metering is not***

In contrast to export metering, 'Gross production' is the only equitable form of metering.

Export metering discriminates against those who are at home during the day – such as families with young children, the elderly and their carers, those who run a business from home, and those who work shift work and are at home during the day. These people have electricity load (consumption) profiles which tend to be higher in the middle of the day when PV power production is at its peak. They will be considerably disadvantaged compared to those whose electricity consumption is concentrated outside business hours, such as dual income couples with no children.

Regardless of whether or not the solar PV owner is at home, a system of the same size and similar location will still produce the same amount of electricity, and thereby will still result in the same greenhouse abatement and demand reduction impact on the grid. The fact that a family exports less or no electricity to the grid during the day compared to the couple is of no consequence, as in the absence of the solar PV, the family would have created a much larger load on the grid.

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<sup>17</sup> The above payback period is based on the following assumptions: capital cost of \$13,000 per kW (for small systems of between 1-2kW); full federal rebate paid of \$8,000 per kW (capped at 1kW); replacement of the inverter at Year 15; inflation rate of 3%; discount rate of 8%.

Export metering, in a situation where a higher than retail tariff is paid to the owner for their exported electricity, essentially values the greenhouse abatement and demand reduction from a working couple's system more highly than demand reduction from a family or pensioner's solar PV system.

The peak energy and power produced by the system is worth the same amount to society, regardless of whether it provides, say 2kW of demand reduction or 2kW of capacity available to the grid.

***Gross metering offers investment certainty – net metering does not***

As outlined above, one of the essential criteria of a successful feed-in tariff is that it provides a stable investment climate and investment certainty – based on a clear payback period. Only gross production metering can provide this climate of investment certainty.

Under net metering, the rate of export to the grid of a particular system will depend on a variety of factors – how large the system is and what the energy consumption pattern of the household is – i.e. how much energy is consumed in the middle of the day?

By definition this means that there is not a standard rate of export to the grid which any purchaser can expect when they are considering buying a solar PV system, as there is a huge variability between systems. While studies conducted by the University of NSW established a range of export rates in their study community within Western Sydney, which were based around system sizes, these rates could well be geographical and socio-economically dependent, and have yet to be tested in other areas.<sup>18</sup> Furthermore, the South Australian Government's discussion paper *South Australia's Feed-in Mechanism for Residential Small Scale Solar Photovoltaic Installations* reported data from South Australian PV systems, which showed between 10-50 per cent range of export rates across the systems, a highly significant variability.

Prior to purchase of the system it is highly unlikely that customers will have the necessary understanding of their daily electricity consumption profile necessary to accurately forecast their export rate. Such a scenario creates an extremely complex environment in which to make a purchase that takes into account the likely payback period of their system.

This system of metering therefore provides no investment certainty to the customer in terms of a predictable payback period; this will act as a barrier to uptake and undermines the primary advantage of the feed-in tariff as a mechanism to drive significant industry growth.

***Export metering disadvantages owners of smaller PV systems***

Customers who cannot afford larger systems are also disproportionately discriminated against under an export metering system, as more of the production of their system is used up in the household meeting ongoing demand i.e. from fridges etc, with less solar energy exported. This means that PV owners receive less income from the energy production of their system although, as for the above example, the systems have benefited the grid to the same amount proportionate to their size and investment.

***Implications for metering practices***

Some parties have held up current metering practices as an impediment to gross production metering. While it is true that the vast majority of systems in Victoria are net metered, the Clean Energy Council is aware that the electricity retailer AGL is now compulsorily requiring gross metering for all customer's systems with whom they enter into an electricity buy-back contract.

In the event that a feed-in tariff based on gross production metering was implemented in Victoria, and that this tariff was also made available to current solar PV system owners as well as owners of new systems, then one option in this circumstance would be to give the customer the option to either

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<sup>18</sup> Personal communication, Dr. Rob Passey, Centre for Energy and Environmental Markets, University of NSW

change over their current metering system to gross production in order to receive the feed-in tariff on all the electricity produced by their system or leave the metering as is and still receive the premium tariff - but only on their net exported electricity. As metering is paid for by the customer, this decision could be left up to the customer, which they could make based on the economic cost-benefit to them under each scenario.

It is important to note that in a minority of cases, the costs of gross metering can be prohibitively expensive for customers – due to the requirement to wire the solar PV system output back to the meter board. Examples of such cases are those where the solar PV system is located a significant distance from the meter board – such as schools and in rural areas. Bearing this in mind, it is important that retailers and distributors be required to offer and accept net metering in these circumstances.

### **Scheme duration of a minimum of 15 years**

As mentioned above, recent studies have concluded that successful feed-in tariffs have *long term guaranteed payments* which create a stable investment climate. Under the German Renewable Energy Law, for example, renewable generators receive a fixed payment for 20 years.

Also, the Stern Review also concluded that “*feed-in mechanisms achieve larger deployment at lower costs. Central to this is the assurance of long-term price guarantees*”.

In line with the international experience, the Clean Energy Council believes that a scheme duration of least 15 years is necessary to create the certainty of a shortened payback period.

### **Access of the commercial sector to a premium feed-in rate will be important to the success of a feed-in scheme**

As identified earlier, solar PV output provides a good match in particular to commercial and industrial loads. There is a good case to be made to ensure that the commercial sector has access to a suitable feed-in rate. Not only would this maximise the benefits of the scheme in terms of demand management, but it would also open up demand in a significantly larger marketplace for solar PV.

Feed-in schemes internationally have succeeded through ensuring the large scale uptake of solar PV in the commercial market. These schemes have been designed to ensure that solar PV has been seen as an attractive investment by the commercial sector.

The commercial sector will be important to the long-term success of the solar PV market in Victoria, as it has been elsewhere. The commercial sector offers the market size required to drive large scale growth of solar PV important for economies of scale and learning.

The commercial sector is subject to differing investment constraints than the residential sector. The future revenue stream must be clear and a payback period of no more than 15 years will be essential to encourage take-up of solar PV systems. By definition the need for a predictable and clear future revenue means that such a scheme design will need to include gross production – not export – metering.

Under net metering, not only would the revenue stream be unpredictable, on weekdays it would be highly unlikely that such a system would actually export any energy to the grid as it would be likely to be used entirely by the business at the point of generation. Ironically, the very reason why these systems are of significant value to the network would ensure low expected income to such a sector.

### **Proposed structure for scheme implementation**

It is important to note that the scheme should be funded in such a way that electricity retailers are not required to shoulder any financial burden resulting from having customers who own solar PV systems.

The Clean Energy Council would support the Victorian scheme adopting a model similar to that outlined by the Bill for the South Australian feed-in tariff – whereby it is a condition of a licence authorising the operation of a distribution network that the DNSP allow a domestic customer to feed

into the network electricity generated by a qualifying generator and that the DNSP will manage the amounts payable for the feed-in tariff to customers.

**ATTACHMENT A:**

**BCSE Survey of retailers' energy buy-back arrangements for small embedded power generators**



Australian  
Business Council  
for Sustainable  
Energy

## Survey of retailers' energy buy-back arrangements for small embedded power generators

### Introduction

There are a number of electricity retailers operating in Australia. In Victoria, South Australia, NSW, ACT and Queensland customers have a choice of retailer. Most retailers, but not all, offer to buy-back electricity generated by small renewable embedded generators, such as solar power systems. The products offered by retailers to buy-back electricity from these systems differ in a number of aspects.

Historically, access to information on which buy-back offers are available from retailers for current and prospective owners of renewable embedded generators has been poor. There has been no "one stop shop" where all this information is available. While information on buy-back offer/s is available on some company websites, at present this is not uniformly the case. This difficulty of accessing information has impeded decision-making by owners of these systems and hence the functioning of the marketplace.

This project aims to improve the functioning, transparency and competitiveness of the retail electricity market for owners of small renewable embedded generation systems, particularly solar photovoltaic systems (focussing on systems of 10kW or less). This project will inform system installers and their customers of the current commercial arrangements for buy-back of electricity from small generation systems. This publicly available report enables easier comparison of electricity retailers buy-back offers and by doing so will support the uptake of embedded generation systems. Furthermore, the availability of this data is a significant resource in the development of solar PV policy and also provides electricity retailers with information on the current offers of their competitors.

### Method

The Business Council for Sustainable Energy (BCSE) developed a survey on buy-back rates, which was distributed in July 2007 to all electricity retailers operating in Australia at the time.

The survey was designed to elicit information on:

- whether the retailer offers to buy-back electricity from small embedded energy generation systems
- any restrictions on eligibility for these offers and what these are i.e. technology type, capacity limit, limit on generated energy paid for or geographical area
- the tariffs offered for energy produced/exported to the grid, including whether time-of-use (ToU) tariffs are offered
- how the energy payments are billed – including how credit is managed and how GST is charged
- charges and costs that are incurred specifically to customers with small-scale generation systems;
- whether the retailer has training and procedures in place for their staff on how to manage inquiries relating to these arrangements
- differing arrangements between states in which the retailer operates
- whether the retailer requires the renewable energy certificates of the system as part of the buy-back offer, or whether or not they offer to buy them independent of the buy-back offer; and
- metering arrangements for customers

The survey was developed and then refined with feedback from two retailers. The BCSE identified and contacted eighteen retailers currently operating in different parts of Australia. Surveys were distributed to all companies who indicated that they have a buy-back offer. After survey responses were received, one round of clarification was then sought on any unclear responses.

The results of the survey will be available publicly on the BCSE website, where it will be possible to view the individual responses of each of the retailers. The results have also been presented to delegates attending the ATRAA 2007 conference of the solar power industry in Australia. Furthermore, notification of the survey and results will also be provided to system installers through the September edition of BCSE's monthly e-news mail out *Installer News*.

## **Results**

The responses of each retailer offering a buy-back arrangement can be separately viewed in the appendices.

An important note to readers of the surveys and this report, is that in this report import and export are worded from the perspective of the system owner, that is, *export* is actually energy going into the grid/produced by the system, and *import* is energy which leaves the grid/consumed by the customer. However, *in the survey*, as the target respondees were the electricity retailers, this was worded from the perspective of the grid, i.e. the meaning of import and export is reversed.

### *Electricity retailers offering buy-back arrangements for embedded energy generators*

How many retailers were offering to buy back electricity from embedded renewable generators? Of the eighteen retailers, one retailer declined to take part (Momentum Energy) and four retailers responded that they do not currently offer buy-back arrangements (Victoria Electricity, Powerdirect, Jack Green and Australian Power and Gas) and all the remaining retailers responded that they offer a buy-back arrangement. These were: ActewAGL, AGL, Aurora Energy, Country Energy, Energy Australia, Ergon Energy, Horizon Power, Integral Energy, Origin Energy, Power and Water Corp, Red Energy, Synergy, and TRUenergy.

### *Eligibility by geographical area*

It should be noted that, within a state, some retailers have limited networks on which they operate. Furthermore, not all the retailers who offer buy-back arrangements offer these in every network distribution area in which they operate. The geographical areas identified by each retailer as their eligible area for buy-back generation are listed in each of the retailer responses in the appendix. For example, AGL indicated that they offer to buy-back power from small embedded generators in Victoria only on the network where AGL is classed as the host or tier1 retailer.

**Table 1 Retailers offering 'buy-back' by state**

State	Retailers offering 'buy-back'
Australian Capital Territory	ActewAGL, Country Energy, TRUenergy
New South Wales	Country Energy, Energy Australia, Integral Energy, Origin Energy, TRUenergy
Northern Territory	PowerWater
Queensland	AGL, Country Energy, Ergon Energy, Origin Energy
South Australia	AGL, Country Energy, Origin Energy, TRUenergy
Tasmania	Aurora Energy
Victoria	AGL, Country Energy, Origin Energy, TRUenergy
Western Australia	Horizon Power, Synergy (AGL through joint venture)

*Eligibility by technology*

In all cases where a buy-back arrangement is offered, solar power is eligible. The below Table 1 indicates which other technologies are eligible for the buy-back arrangements of each of the retailers.

**Table 2 Eligibility for retailer energy buy-back arrangements by technology**

Offer for	Retailer
All renewable technologies	Power and Water Corp, Synergy
Solar power, small wind and hydro	Country Energy
Solar power and small wind	Aurora Energy
Solar power. Wind +/- hydro subject to meeting network connection requirements. May be negotiated on a case by case basis	Actew AGL, AGL, Energy Australia, Ergon Energy, Horizon Power, Integral Energy
Solar power. Wind negotiated separately	Origin Energy
Solar power only	TRUenergy
Unclear whether offered for other technologies	Red Energy

### *Eligibility by system capacity*

Most retailers indicated that eligibility for their buy-back arrangements is determined by a cap on system capacity. See the below Table 2 for the relevant capacity caps.

**Table 3 Eligibility for retailer energy buy-back arrangements by capacity**

Capacity Cap	Retailer
3kW solar, 100kW wind	Aurora
5kW	Synergy, Horizon Power
10kW	Integral, Ergon Energy, Energy Australia, ActewAGL, Country Energy
30kW	Power and Water
100kW	AGL, TRUenergy
No Cap	Origin Energy

Aurora has a hybrid capacity or energy cap for small wind, which is explained in their survey response. It is unclear whether Red Energy has a cap on system capacity. Origin Energy does not have a cap on system capacity, instead they have a different arrangement with a cap on the electricity purchased from individual systems, and this is 500kwh per 'quarter' (three month billing period).

### *Buy-back rates offered*

Essentially nearly all the retailers which offer buy-back rates offer '1 for 1' rates or similar, where the rate at which energy bought back is equal to the retail rate paid, less GST. These are paid by AGL, Country Energy, Energy Australia, Ergon Energy, Horizon Power, Integral Energy, Origin Energy, Power and Water, Synergy, and TRUenergy.

A variation on the '1 for 1' tariff is currently being offered by ActewAGL and Aurora. These companies pay '1 for 1' but only until the customer is in the position of being in net export to the grid over a billing period. That is, over a billing period once a household has exported as much energy as it has imported, then the net export is credited at a lower rate than 1 for 1. In the case of ActewAGL it is bought at 7.4c/kWh and in Aurora's case the net export is bought at wholesale price. Red Energy is currently offering to buy back electricity on the SP Ausnet distribution network in Victoria at the flat rate of 7c/kWh.

### *Time-of-use tariffs*

Time-of-use (ToU) tariffs are those where customers are charged different rates for electricity usage depending on the time of day. Typically these involve different rates for peak and off peak times (with or without a 'shoulder' period) during the week and weekend. Some retailers that have retail ToU tariffs also offer a '1 for 1' buy back for customers on these tariffs. These retailers are Energy Australia, Origin Energy, Synergy and TRUenergy.

### *Billing – GST and managing credit*

One potential issue for customers is how credit is managed in the situation where a customer gets into a position of net credit on a bill, that is, the retailer owes them money due to the value of their exported electricity being greater than the cost of their imported electricity over a billing period. While most retailers indicate that they carry the amount forward, Horizon Power, Integral Energy, Origin Energy and Energy Australia stated that customers could write to request that their credit be paid out. ActewAGL stated that they pay out at the end of the billing period.

GST is charged on imports/consumption and not on exports/production. On a 1 for 1 basis this means the rate paid is 10/11ths of the rate charged. In the case of net metering with a single 'disc' meter it is only possible to apply GST to the overall net at the end of the billing period. In the cases where import

and export are recorded separately most retailers indicate that GST is charged on all the electricity imported/consumed before deducting the credit for export.

#### *Staff training procedures*

All retailers indicated that they have training and procedures in place within their sales channels to ensure that staff has the appropriate information on how to process enquiries for buy-back of small renewable generators.

#### *Up-front charges*

Direct comparison of charges between companies is hampered by the fact that some retailers are vertically integrated energy companies including a distribution business, while others only have retail functions. Three companies currently charge an upfront administration/application fee - of approximately \$100. These companies are Synergy, Horizon Power and Ergon Energy. Some of the companies also detailed meter fees which may apply. While metering is the domain of distribution companies this survey was seen to be a useful opportunity to gather some of this information. Three companies indicated there was no charge for the purchase of the meter – ActewAGL, Energy Australia and Integral Energy.

#### *Metering methodology*

While the vast majority of metering practices involve metering either net import/export, two retailers – Integral Energy in NSW and Power and Water Corporation in the ACT - indicated that it is their standard practice to meter gross production/consumption. Furthermore Origin Energy indicated that some of their Queensland customers have gross production/consumption metered.

#### *Renewable Energy Certificates*

Retailers were asked whether they seek to acquire the Renewable Energy Certificates (RECs) from the systems of their buy-back customers. Four retailers – Origin Energy, Ergon Energy, Aurora and AGL – indicated that while they do offer to buy their customers RECs this is independent of their buy-back offer i.e. it does not impact on eligibility for buy-back or the rate they pay. ActewAGL indicates that when customers enter into a buy-back arrangement with ActewAGL, the contract states that ActewAGL owns all RECs creatable from the imported generation. The remaining retailers do not offer to buy RECs from their buy-back customers.

Of the thirteen retailers who offer feed-in rates and completed a survey, six indicated a recent or approaching change in their offer. Most were modifying their existing offer – extending to a new State, ToU tariff, or other product. We understand, however, that Country Energy was reassessing their buy-back arrangements including the tariff rate.

### **Discussion**

The vast majority of retailers surveyed offer a buy-back arrangement for at least solar power and in some cases other forms of small renewable embedded generation. In all cases solar power is eligible for these offers. In some cases wind and hydro power is also or may also be eligible, however a majority do not yet include these technologies as standard eligible systems.

It now appears that a '1 for 1' tariff has now been taken up by almost all major retailers who offer a buy-back arrangement, essentially creating an industry standard for tariff rate. Most retailers other than Origin Energy have chosen to limit access by system capacity caps, rather than by limiting the amount of energy per system that will be paid for.

Of interest for customers with solar PV systems and solar PV installers, a '1 for 1' buy-back on ToU tariffs is offered by four retailers. By offering higher rates in the middle of the day when all PV energy is produced, a customer with a solar PV system can receive greater value for their produced energy. A Californian study has found that in the Californian energy market, which is similar to that of Australia, solar PV being paid an average wholesale rate (as a component of the average flat retail rate) rather

than the real-time market rate resulted in it being significantly undervalued<sup>1</sup>. When solar PV production was valued according to the time varying wholesale market value, the energy generated by solar PV was worth 29-48% more than its remuneration on a flat wholesale '1 for 1' basis. The same study found that if ToU tariffs were paid for solar power this predominantly closed the 'undervaluing gap' and customers received value for their solar power much closer to the real-time value. However this is unlikely to be advantageous for customers who are in general still in a net import position during peak periods (and who are unable to effect significant demand management gains during these periods) which are greater than that of the electricity produced from the system.

The survey shows that half of the retailers have just modified or are contemplating changing some aspect of their buy-back arrangements. This is an indication of the dynamic nature of these offers and that retailers are taking an interest in the type of arrangements they provide to owners of small renewable embedded generation systems. This also emphasises the importance of having a dedicated contact point within each company and/or information on company websites, so that interested parties, particularly installers of these systems (on behalf of their customers), can access up-to-date information on the current offer available. To this end, the BCSE will also seek to make available on the BCSE website contact information for the relevant contact point within each retailer.

This survey of retailers received funding from the Australian Greenhouse Office.

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<sup>1</sup> Borenstein, S. (2005) Valuing the time-varying electricity production of solar photovoltaic cells. Centre for the Study of Energy Markets (CSEM) Working Paper Series. University of California Energy Institute. <http://www.ucei.berkeley.edu/PDF/csemwp142.pdf>, accessed August 2, 2007.

## **Appendix A – Retailer Survey Responses**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**ActewAGL response**

The following buy-back arrangements apply to solar power only.

1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic? <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below. If no, thank you for your time.</i>	Yes
2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i> ? If so, please outline the new arrangements if possible.	No
3. In which States/Territories do you offer this? If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.	ACT only
4. What is the upper limit of system capacity (kW) for this service?	10 kW
5. In regard to metering, do you require meter data in intervals i.e. half hourly?	No
6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.	No, however output is limited by nominal system size (see 4 above – maximum of 10kW of installed generation).
7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold	Full retail offset of customer's electricity exports against imports from ActewAGL's distribution network. Once customer becomes a 'net exporter', net exports attract a rate of 7.4c/kWh (GST incl.) Net credit is paid out at the end of the billing period.
8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?	Yes
9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems? If yes, does this affect the rates you offer these customers for their electricity?	Yes. When customer enters into a buy-back arrangement with ActewAGL, ActewAGL owns all RECs creatable from the imported generation.
10. Please detail any up-front/once-off charges on new customers with small embedded generators.	No up front charges. ActewAGL install appropriate metering free of charge (although it is the customer's responsibility to ensure sufficient switchboard space).

<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a "1 for 1" feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	Full offset of exports against imports from grid (ie. Exports attract full retail rate). If exports exceed imports during a billing period, then the excess fed into the grid attracts 7.4 c/kWh (GST incl.)	"1 for 1" offset until customer becomes a 'net exporter' during a billing period. Net exports attract the rate of 7.4 c/kWh (GST incl.)	Not applicable	GST is calculated on net energy (exports minus imports). For net exporters attracting 7.4c/kWh, GST component is calculated as 1/11 <sup>th</sup> of this 7.4c/kWh.
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)	Not applicable	Not applicable	Not applicable	Not applicable
<b>Gross production/consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)	Not applicable	Not applicable	Not applicable	Not applicable

**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**AGL response**

The following details apply to buy-back of solar power. AGL would respond to a request for buy-back of wind or hydro power up to 100kW on a case-by-case basis.

1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic? <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i> <i>If no, thank you for your time.</i>	YES
2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i> ? If so, please outline the new arrangements if possible.	YES, IN THE NEXT 3-6 MONTHS.
3. In which States/Territories do you offer this? If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.	QLD, SA, VIC, WA (through JV). Looking into NSW in 3-6 months.
4. What is the upper limit of system capacity (kW) for this service?	100 kW
5. In regard to metering, do you require meter data in intervals i.e. half hourly?	NO
6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.	NO
7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold	CARRIED FORWARD INDEFINITELY
8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?	YES, WITHIN LIMITATIONS. REVIEWING IN 3-6 MONTHS.
9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems? If yes, does this affect the rates you offer these customers for their electricity?	YES. AT PRESENT NO EFFECT ON BUYBACK RATE IF CUSTOMER CHOOSES NOT TO ASSIGN THE RECS TO AGL. UNDER REVIEW.
10. Please detail any up-front/once-off charges on new customers with small embedded generators.	METERING FEES PASSED ON BY DISTRIBUTORS. ETSA/SA, UNITED ENERGY/VIC, ALINTA AE/VIC, ENERGEX,

	QLD.
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<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a “1 for 1” feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	<b>CATER FOR ALL METHODS.</b>	VIC On-Patch <sup>1</sup> : 12.84 c/kWh  QLD: 1 for 1 SA: 1 for 1	N/A	GST on supply/export ; no GST on generated/import.
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)	<b>CATER FOR ALL METHODS.</b>	1 for 1  <u>If net import to grid:</u> Excess in Vic: 12.84 c/kWh Excess in QLD: 1 for 1 Excess in SA: 1 for 1	N/A	GST on NET
<b>Gross production/ consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)	<b>CATER FOR ALL METHODS.</b>	VIC On-Patch: 12.84 c/kWh  QLD: 1 for 1 SA: 1 for 1	N/A	GST on supply/export. No GST on generated/import.

**Thank you for your assistance.**

<sup>1</sup> “On-patch” means on a network where AGL is classed as the host or tier 1 retailer.



**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**Aurora Energy response**

The following buy-back arrangements are available for wind and solar power.

<p>1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic?  <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i>  <i>If no, thank you for your time.</i></p>	<p>Yes</p>
<p>2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i>?          If so, please outline the new arrangements if possible.</p>	<p>No</p>
<p>3. In which States/Territories do you offer this?          If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.</p>	<p>TAS</p>
<p>4. What is the upper limit of system capacity (kW) for this service?</p>	<p>Solar – 3 KW (greater than 3KW on case-by-case basis),          Direct Connected: Wind; 100KW max (for aggregated generation &lt;5MW).          Site meter connected: Wind; the limit of eligibility for the offer is <i>the lesser of</i> 100KW of customer installation OR expected generation of no more than 60% of customer's normal generation (based on a 40% capacity factor).          Max aggregated load &lt;250KW. (Systems which exceed this limit are paid wholesale rates.)</p>
<p>5. In regard to metering, do you require meter data in intervals i.e. half hourly?</p>	<p>Yes, smart meters are required.</p>
<p>6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.</p>	<p>Solar – no cap. Variable rates based on customers consumption.</p> <p>Wind: related to upper limit capacity restriction (as above).</p>
<p>7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold</p>	<p>Small generators – as per their electricity billing cycle (ie; mthly or qtrly). In the event a net export occurs usually the next invoice is credited rather than paying the credit out.          Large users – negotiated with customer on a case-by-case basis.</p>
<p>8. Do you have training and procedures in place within your sales channels (call centres, promotions)</p>	<p>Yes</p>

<p>to ensure that staff know how to process/refer those customers?</p>	
<p>9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems? If yes, does this affect the rates you offer these customers for their electricity?</p>	<p>Small generators: Yes, however it is not a requirement to be eligible for the feed-in rate. Large generators: negotiated on a case-by-case basis.</p>
<p>10. Please detail any up-front/once-off charges on new customers with small embedded generators.</p>	<p>Small generators: The customer would normally be required to meet any additional metering costs (above the cost of a standard meter) as assessed on a case by case basis for the proposed installation. However Aurora is able to waive the meter costs in most situations at present. Large generators: negotiated on a case-by-case basis.</p>

<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a “1 for 1” feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	Import/export metering required for systems >3kW	For installations with a capacity of less than 3kW: tariff of ‘1 for 1’ Where, for any metered period, the quantity of energy imported to the grid exceeds the quantity of energy exported from the grid, the difference will be credited at a price related to Aurora's wholesale energy purchasing costs.	Not to date	For sites where both import and export is measured GST inclusive rates are used to calculate the amounts in both directions.
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)	Net metering only for systems under 3kW.	For systems with capacity >3kW: energy will be credited at a price related to Aurora's wholesale energy purchasing costs. Credit will not be given at the standard connected tariff rate.  Step 1 First 500 kWh/Qtr: 15.923 cents per kWh Step2 Next 1,000 kWh: 15.153 cents per kWh Remainder units at 11.135 cents per kWh (All rates include GST)		

<b>Gross production/ consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)				
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**Thank you for your assistance.**

**Attachment A:**

**GRID INTERACTIVE SOLAR POWER  
&  
NET METERING OPTION**

**1) Does Aurora allow customer grid interactive solar connections?**

Yes, provided relevant technical and safety requirements are met

**2) Who is the relevant contact person at the company?**

Darren Brown      03 6237 3509      Darren.Brown@[auroraenergy.com.au](mailto:auroraenergy.com.au)

**3) Do you offer special package systems? (Solar panels, inverters, meters, etc)**

Not currently. There are a number of local suppliers of associated equipment in Tasmania.

#### **4) What costs are involved for the consumer? (eg, meter, connection, etc)**

The customer is responsible for installation costs and costs involved in meeting Aurora's technical and safety requirements. The customer would normally be required to meet any additional metering costs (above the cost of a standard meter) as assessed on a case by case basis for the proposed installation. However Aurora is able to waive the meter costs in most situations at present.

For installations with a capacity of less than 3kW, the metering system needs only to record the net energy flow (ie the balance of import energy less export energy). For installations over 3kW the metering system needs to be capable of measuring and recording separately imports from and exports to the Grid.

#### **5) Will the consumer be credited for the electricity generated?**

Yes.

#### **6) If yes, at what rate will they be credited?**

For installations with a capacity of less than 3kW, net metering applies. Therefore, the energy is credited to the account at the same rate as the import energy rate (ie the marginal rate of the applicable tariff). Where, for any metered period, the quantity of energy exported exceeds the quantity of energy imported, the difference will be credited at a price related to Aurora's wholesale energy purchasing costs

For systems with an installation capacity above 3kW energy will be credited at a price related to Aurora's wholesale energy purchasing costs. Credit will not be given at the standard connected tariff rate.

#### **7) What is the standard domestic rate?**

The 2007 standard domestic Tariff 31 (Residential light and power) is a 3-step rate:  
For a standard 91 days,

## **Rates**

Step 1 First 500 kWh/Qtr: 15.923 cents per kWh  
Step2 Next 1,000 kWh: 15.153 cents per kWh  
Remainder units at 11.135 cents per kWh

(All rates include GST)

For other tariff rates refer to your latest Aurora bill.

#### **8) What is the Commonwealth Government PV Rebate Program (PVRP):**

Under the Photovoltaic Rebate Program (PVRP), cash rebates are available to householders (and for community buildings to install grid-connected or stand-alone photovoltaic systems.

Rebates are available at the rate between \$2.5 to \$4.0 per Watt peak of photovoltaic capacity with a maximum rebate of \$4,000 (minimum size capacity is 450 Watts). Conditions apply, and applicants must seek approval before a system is installed.

For more information contact the Photovoltaic Rebate Program national information line on 1300 138 122. Information is also available online at [www.greenhouse.gov.au/renewable](http://www.greenhouse.gov.au/renewable)

## **Clarification/Additions to Country Energy Response**

The following buy-back arrangements outlined are offered for small wind and hydro systems as well as solar power.

Q7 – If net credit - this is paid on each account.

GST is paid on the energy the customer imports from the grid.

Metering appears to be a mix of import/export and net (disc) metering.

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

Thank-you for taking the time to respond to this survey, this information will be important to improving the functioning of the market for small embedded power generation systems.

<p>1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic?  <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i>  <i>If no, thank you for your time.</i></p>	<p>Yes</p>
<p>2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i>?          If so, please outline the new arrangements if possible.</p>	<p>Yes. Country Energy has modelled different options for a revised buy-back tariff and policy. The revised package is currently subject to Executive approval. Details will be provided to the BCSE once approval has been granted.</p>
<p>3. In which States/Territories do you offer this?          If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.</p>	<p>ACT NSW QLD SA VIC          The same arrangements apply in each jurisdiction where CE holds a retail license. It is the customer or installer's responsibility to liaise with network owners and operators</p>
<p>4. What is the upper limit of system capacity (kW) for this service?</p>	<p>200kW installed capacity. Above this limit, Country Energy's Energy Trading team will consider the most appropriate form of buyback</p>
<p>5. In regard to metering, do you require meter data in intervals i.e. half hourly?</p>	<p>No</p>
<p>6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.</p>	<p>No (residential solar PV) – as long as the system is under 10kW installed capacity. For systems over this threshold, reviewed on a case by case basis</p>
<p>7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold</p>	<p>For the current policy, export energy is net metered, with the exported energy appearing on the customer account as a credit. The account is calculated as import minus export + billed amount.</p>
<p>8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?</p>	<p>Yes – Q&amp;A for contact centre staff, with dedicated referral points within the business for administration and technical inquiries. Negotiations are underway with potential external service providers to streamline this process.</p>
<p>9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems?          If yes, does this affect the rates you offer these customers for their electricity?</p>	<p>No . Country Energy generally deals directly with system wholesalers/distributors who seek to aggregated RECs and sell them on the open market.</p>
<p>10. Please detail any up-front/once-off charges on new customers with small embedded generators.</p>	<p>N/A</p>

<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a "1 for 1" feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	N/A	N/A	N/A	N/A
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)	3 monthly Billing Cycle	1 for 1 for residential solar PV (less than 10kw) <tariff rates dependent on location.  Commercial Generation TOU	Only for above 10 kw  Price on application and reflective of current market rates.	All bill calculations are done excluding GST. GST added to combined components.
<b>Gross production/consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)	N/A	N/A	N/A	N/A

**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**Energy Australia response**

The following details apply to solar power systems. They would also apply to other renewable technologies subject to the system meeting network connection requirements.

<p>1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic?  <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i>  <i>If no, thank you for your time.</i></p>	<p>Yes.</p>
<p>2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i>?          If so, please outline the new arrangements if possible.</p>	<p>Yes, we are about to introduce time of use buy back rates.</p>
<p>3. In which States/Territories do you offer this?          If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.</p>	<p>EnergyAustralia only offer buy back rates in our network area in NSW.</p>
<p>4. What is the upper limit of system capacity (kW) for this service?</p>	<p>Standard buy back rates apply for all systems up to 10kW capacity. Individual rates are negotiated for systems larger than 10kW.</p>
<p>5. In regard to metering, do you require meter data in intervals i.e. half hourly?</p>	<p>Yes, for time of use buy back.           No, for single consumption buy back.</p>
<p>6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.</p>	<p>No</p>

<p>7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold</p>	<p>The credit for buy back is provided on the customers monthly or quarterly invoice. For customers in a position of net credit, this will generally be carried forward, however customers may request for this to be paid out.</p>
<p>8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?</p>	<p>Yes</p>
<p>9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems? If yes, does this affect the rates you offer these customers for their electricity?</p>	<p>No</p>
<p>10. Please detail any up-front/once-off charges on new customers with small embedded generators.</p>	<p>Integral Energy supply the meter free of charge. The customer must arrange and pay for the installation of the meter. No additional charges.</p>

<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a “1 for 1” feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	-	1 for 1	1 for 1	<p>GST on energy consumed.</p> <p>No GST on buy back credit as residential customers generally are not registered for GST.</p> <p>Whilst this is a GST taxable supply, unless you are registered for GST ie a business, you cannot charge GST.</p> <p>GST legislation does not allow for transactions to be netted off so EnergyAustralia has no discretion to impose GST just on the net electricity supplied.</p>
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)				

<b>Gross production/ consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)				
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**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**Ergon Energy response**

The following details apply to solar power systems, requests for buy-back of energy from other renewable energy systems such as wind and hydro power are considered on a case by case basis.

<p>1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic?  <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i>  <i>If no, thank you for your time.</i></p>	<p>Yes</p>
<p>2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i>?  If so, please outline the new arrangements if possible.</p>	<p>Yes – This survey is being completed based on the new agreement</p>
<p>3. In which States/Territories do you offer this?  If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.</p>	<p>QLD (note that Ergon Energy is only legally able to sell electricity to customers in their retail area in Queensland)</p>
<p>4. What is the upper limit of system capacity (kW) for this service?</p>	<p>10kW</p>
<p>5. In regard to metering, do you require meter data in intervals i.e. half hourly?</p>	<p>No – However we are installing interval type meters</p>
<p>6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.</p>	<p>No</p>
<p>7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold</p>	<p>Carried forward as a credit on the account</p>
<p>8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?</p>	<p>Yes</p>
<p>9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems?  If yes, does this affect the rates you offer these customers for their electricity?</p>	<p>The customer is able to sell their RECs to either a third party or Ergon Energy at their discretion.</p>
<p>10. Please detail any up-front/once-off charges on new customers with small embedded generators.</p>	<p>There are two fees:</p> <ul style="list-style-type: none"> <li>• An administration fee of \$100; and</li> <li>• A meter installation fee of \$100</li> </ul>

<b>Type/s of customer metering utilised</b>  <b>Note that depending on the physical nature of the installation either Import/export or Net metering may be used</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a “1 for 1” feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	Charges are levied on a net basis per quarter (for residential).	Feed in Tariff is on a 1 for 1 basis	Not applicable	GST is calculated on the net metered component
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)	Charges are levied on a net basis per quarter (for residential).	Feed in Tariff is on a 1 for 1 basis	Not applicable	GST is calculated on the net metered component
<b>Gross production/ consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)				

**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**Horizon Power response**

The following rates apply to solar power systems. Other renewable technologies such as small wind systems may also apply and would be assessed on a case-by-case basis. They would need to meet the network connection requirements.

1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic? <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i> <i>If no, thank you for your time.</i>	Yes
2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i> ? If so, please outline the new arrangements if possible.	No
3. In which States/Territories do you offer this? If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.	WA
4. What is the upper limit of system capacity (kW) for this service?	5kW
5. In regard to metering, do you require meter data in intervals i.e. half hourly?	No
6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.	No
7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold	If the account is in credit the customer can request a payout of that credit. However this is limited to once every six months.
8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?	Yes
9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems? If yes, does this affect the rates you offer these customers for their electricity?	No
10. Please detail any up-front/once-off charges on new customers with small embedded generators.	\$107 ( inc GST) Application fee \$199 (inc GST) for connection and supply of single phase connection and meter \$499 (inc GST) for connection and supply of three phase connection and meter

<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a “1 for 1” feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	Both imports and exports are metered. Charges are based on net usage (import less exports) for our normal billing period. Typically a two-month billing period.	Buy back tariff rate is the same as our normal sales tariff rate applicable for that account. Effectively “1 for 1”. We have separate tariffs for import and export components. The import including GST, the export excluding GST. However the underlying rates are the same. See <a href="http://www.horizonpower.com.au/residential/about_account/prices_fees/">http://www.horizonpower.com.au/residential/about_account/prices_fees/</a>	N/A	GST and billing are applied to the net energy. If the account ends up with credit for a bill, the credit value excludes GST. The net component of the next bill is still charged GST inclusive ( if it is in debit ) and the customers previous credit (GST exc) is applied against it.
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)	N/A	N/A	N/A	N/A
<b>Gross production/ consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)	N/A	N/A	N/A	N/A

**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**Integral Energy response**

The following details apply to solar power systems, requests for buy-back of energy from other renewable energy systems such as wind and hydro power would be considered on a case by case basis. They would need to meet the network connection requirements.

<p>1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic?  <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i>  <i>If no, thank you for your time.</i></p>	<p>Yes</p>
<p>2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i>?          If so, please outline the new arrangements if possible.</p>	<p>No</p>
<p>3. In which States/Territories do you offer this?          If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.</p>	<p>NSW – in the Integral Network area only</p>
<p>4. What is the upper limit of system capacity (kW) for this service?</p>	<p>The upper limit is the 10kW inverter capacity for solar power systems (a Sun Power contract). Contact Integral Energy regarding connection of other technologies.</p>
<p>5. In regard to metering, do you require meter data in intervals i.e. half hourly?</p>	<p>No</p>
<p>6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.</p>	<p>No, however there is a cap on the system capacity – see Q4 above.</p>
<p>7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold</p>	<p>Carried forward indefinitely and paid out upon customers request</p>
<p>8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?</p>	<p>Yes</p>
<p>9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems?          If yes, does this affect the rates you offer these customers for their electricity?</p>	<p>No</p>
<p>10. Please detail any up-front/once-off charges on new customers with small embedded generators.</p>	<p>Integral Energy charges no administration fees. The meter (a standard Type 6 meter) is</p>

	provided at no cost. The customer must pay for the installation of the meter.
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<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a "1 for 1" feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)				
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)				
<b>Gross production/ consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)	Meter reading, gross generation	Same rate as the first block of the inclined block tariff less GST. Presently set at 12.34270c/kwh	Not offered	GST collected for consumption only

**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
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**small embedded power generators**

**Origin Energy response**

The following refer to buy-back rates for solar power. Origin Energy do buy back wind but negotiate this separately.

1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic? <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below. If no, thank you for your time.</i>	Yes
2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i> ? If so, please outline the new arrangements if possible.	No
3. In which States/Territories do you offer this? If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.	NSW QLD SA VIC
4. What is the upper limit of system capacity (kW) for this service?	No limit to system
5. In regard to metering, do you require meter data in intervals i.e. half hourly?	No
6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.	Yes, the cap is 500kwh per quarter
7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold	Carried forward indefinitely or until customer requests refund cheque
8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?	Yes
9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems? If yes, does this affect the rates you offer these customers for their electricity?	Yes  Does not affect rates at this time
10. Please detail any up-front/once-off charges on new customers with small embedded generators.	Project Fees applied by the distribution businesses only.

<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a "1 for 1" feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	Net- billed Quarterly all states NSW, VIC, SA  QLD does have some import/export metered separately as well as net	1/1 buyback- generation is credited at retail rate  c/kWh are dependent upon what product/tariff the customer is on	1/1 buyback.  These rates differ from state to state and between products. Standard within Powercor distribution area is 18.55c peak and 7.21c offpeak.	GST is calculated on all energy imported to the house.
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)	NSW, VIC, SA, QLD			
<b>Gross production/ consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)	Some QLD customers have Gross metering as determined by the distribution company			

**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**Power and Water Corporation response**

The following buy-back tariff covers any renewable energy approved by the Office of the Renewable Energy Regulator (ORER).

1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic? <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i> <i>If no, thank you for your time.</i>	Yes
2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i> ? If so, please outline the new arrangements if possible.	No
3. In which States/Territories do you offer this? If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.	NT
4. What is the upper limit of system capacity (kW) for this service?	30 kVA
5. In regard to metering, do you require meter data in intervals i.e. half hourly?	No
6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.	No
7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold	Credited to the account when the meter is read. If there is a net credit to the customer over the billing period, this would be carried forward.
8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?	Yes
9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems? If yes, does this affect the rates you offer these customers for their electricity?	No
10. Please detail any up-front/once-off charges on new customers with small embedded generators.	\$150 for the meter is the only charge. No installation charge as the meters are plug-in meters, the electrician provides the socket as part of the job.

<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a "1 for 1" feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)				
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)				
<b>Gross production/consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)	A separate meter records the gross production and all of the renewable energy is paid for.	15.01 cents/kWh which is the same as the retail rate.	N/A	GST is collected for the energy consumed in the premises. RE purchased is treated the same as RECs.

**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**Red Energy response**

<p>1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic?  <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i>  <i>If no, thank you for your time.</i></p>	<p>Yes. Currently only SP Ausnet area.</p>
<p>2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i>?  If so, please outline the new arrangements if possible.</p>	<p>Yes. Looking to expand to other networks, starting with United.</p>
<p>3. In which States/Territories do you offer this?  If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.</p>	<p>VIC</p>
<p>4. What is the upper limit of system capacity (kW) for this service?</p>	<p>Residential/SME market</p>
<p>5. In regard to metering, do you require meter data in intervals i.e. half hourly?</p>	<p>No, but I think this is a metrology requirement.</p>
<p>6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.</p>	<p>No</p>
<p>7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold</p>	<p>Standard retail billing cycle</p>
<p>8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?</p>	<p>Limited. In house experts to deal with it, but looking to train Customer Service Representatives more widely in future as market grows.</p>
<p>9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems?  If yes, does this affect the rates you offer these customers for their electricity?</p>	<p>Not necessary. Red's parent Snowy Hydro will consider purchase of RECs separately.</p>
<p>10. Please detail any up-front/once-off charges on new customers with small embedded generators.</p>	<p>Meter addition and/or alteration usually required for which Red charges a fee (subject to a prompt payment discount). Rates vary by network and a quote should be sought from Red who will request the work from the network.</p>

<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a "1 for 1" feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)				
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)				
<b>Gross production/ consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)				

**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**Synergy response**

The following details apply to rates offered for all renewable technologies.

<p>1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic?  <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i>  <i>If no, thank you for your time.</i></p>	<p>Yes</p>
<p>2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i>?          If so, please outline the new arrangements if possible.</p>	<p>No</p>
<p>3. In which States/Territories do you offer this?          If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.</p>	<p>WA</p>
<p>4. What is the upper limit of system capacity (kW) for this service?</p>	<p>5kW</p>
<p>5. In regard to metering, do you require meter data in intervals i.e. half hourly?</p>	<p>No</p>
<p>6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.</p>	<p>No:</p>
<p>7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold</p>	<p>Paid immediately – credit applied to each account. If the amount in credit on the bill exceeds the amount in debit by more than \$100 each month for more than 6 consecutive months (\$200 per bi-monthly billing cycle for 3 bills), then Synergy will pay the balance to the customer, on written request, by cheque.</p>
<p>8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?</p>	<p>Yes</p>
<p>9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems?          If yes, does this affect the rates you offer these customers for their electricity?</p>	<p>No</p>

10. Please detail any up-front/once-off charges on new customers with small embedded generators.

\$107 Assessment Fee payable to Western Power (network operator).  
Meter upgrade costs may apply.

<b>Type/s of customer metering utilised</b>	<b>Billing method</b> How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	<b>Tariff offered</b> What rate do you offer system owners? i.e. a “1 for 1” feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	<b>Time-of-use (ToU) tariffs</b> Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	<b>GST</b> Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
<b>Import/export metering</b> (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	Customers are billed for their net import and credited for their net export of electricity over a billing period.	Customers are offered renewable energy buyback rates equal to their selected electricity purchase rates, less the GST component. This means that Synergy will buy power from the customer at 10/11ths of the price Synergy sells to the customer.	Please refer to Synergy website: <a href="http://www.synergyenergy.com.au/Residential_Segment/Green_Energy/Sale_%26_Purchase_Rates.html">http://www.synergyenergy.com.au/Residential_Segment/Green_Energy/Sale_%26_Purchase_Rates.html</a>	GST is applied to all energy exported from the grid.
<b>Net metering</b> (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)				
<b>Gross production/consumption metering</b> (where all electricity produced by the generator is metered as well as all electricity consumed in the household)				

**Thank you for your assistance.**

**Business Council for Sustainable Energy**  
**Survey of retailers' energy buy-back arrangements for**  
**small embedded power generators**

**TRUenergy response**

The following buy-back arrangements apply to solar power only.

<p>1. Do you offer buy-back arrangements (energy purchase facility) for customers with small embedded generators which export electricity to the grid, such as solar photovoltaic?  <i>If yes, please fill in the relevant sections of the grid on the reverse side as well as the questions below.</i>  <i>If no, thank you for your time.</i></p>	<p>Yes</p>
<p>2. Are your current arrangements for buy-back of embedded generation <i>just about to change</i>?          If so, please outline the new arrangements if possible.</p>	<p>Yes          In August 2007, Truenergy will be able to offer the following products: Go for More, Go Easy &amp; GRTs with a 1:1 buy back ratio. Currently, TRUenergy does not have a solar business product on the market.</p>
<p>3. In which States/Territories do you offer this?          If your metering and billing arrangements differ between the states, please specify how they differ for each of the questions below and over the page.</p>	<p>ACT NSW SA VIC</p>
<p>4. What is the upper limit of system capacity (kW) for this service?</p>	<p>100kW. Larger systems dealt with on a case by case basis.</p>
<p>5. In regard to metering, do you require meter data in intervals i.e. half hourly?</p>	<p>No</p>
<p>6. Is there a cap on the amount of energy (kWh) purchased? If so, please detail.</p>	<p>Yes          As stated above.</p>
<p>7. How is billing credit managed? i.e. carried forward indefinitely, paid immediately, paid once amount reaches a threshold</p>	<p>Credits are not paid in cash, it is an energy credit only.</p>
<p>8. Do you have training and procedures in place within your sales channels (call centres, promotions) to ensure that staff know how to process/refer those customers?</p>	<p>Yes</p>
<p>9. Do you seek to acquire the Renewable Energy Certificate's associated with your customers' renewable energy systems?          If yes, does this affect the rates you offer these customers for their electricity?</p>	<p>No</p>
<p>10. Please detail any up-front/once-off charges on new customers with small embedded generators.</p>	<p>No additional charges other than metering charges which may be incurred from the distributor.</p>

Type/s of customer metering utilised	Billing method How do you calculate the amount of electricity on which tariffs are paid? i.e. are tariffs paid on <i>total</i> import or production OR on <i>net</i> (export less import) over a certain period? If net billing - over what period?	Tariff offered What rate do you offer system owners? i.e. a “1 for 1” feed-in tariff - where the feed-in rate equals the retail rate OR feed-in tariff different to retail tariff – if so, what rate/s (c/kWh) do you offer?	Time-of-use (TOU) tariffs Please detail the feed-in rate/s you offer customers on time-of-use tariffs.	GST Please specify how GST is calculated i.e. on all energy exported, net (export less import), all energy consumed in the house, etc.
Import/export metering (where electricity <i>imported to</i> and <i>exported from</i> the grid are separately metered)	All photovoltaic data received by Truenergy has been in the form of both imported & exported energy.	Currently the rate that TRUenergy offers to our photovoltaic customers is based on a “1 for 1” ratio. Truenergy reserve the right to alter this pricing structure in future price changes.	<p><u>Go Easy/Go for More</u> Peak (7am – 11pm Mon – Fri) *** p/kWh  Off Peak (All other times) *** p/kWh</p> <p><u>GRT - GHGL</u>  (Government Regulated Tariff – available to ‘In area’ (SP Ausnet) customers)  Peak (7am – 11pm Mon – Fri) ***p/kWh  Off Peak (All other times) ***p/kWh</p> <p>- TOU tariffs are only offered to custs with TOU meter configs.  - Rates differ based on state.</p>	GST is only calculated on energy that customers export from the grid. GST is not applied to any imported energy that residential customers put back into the grid.
Net metering (where only the net of electricity <i>exported from</i> the grid less all electricity <i>imported to</i> the grid is metered)				

Gross production/ consumption metering (where all electricity produced by the generator is metered as well as all electricity consumed in the household)				
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**Thank you for your assistance.**