bp solar

Inquiry into the Renewable Energy (Electricity) Amendment (Feed-in Tariff) Bill 2008

Submission to the Senate Standing Committee on Environment, Communications and the Arts by BP Solar Pty Ltd

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Executive summary

With the exception of the ACT's proposed feed-in tariff (FIT) and the FIT on trial in the Alice Solar City project, the FITs introduced or being introduced so far in Australia will fail to spark the intended investment in solar energy and the lack of national uniformity creates unnecessary complexity for customers and utilities alike.

To be effective in sparking industry growth, the national FIT policy currently under consideration MUST include the following:

- be for gross generation – that is, the premium tariff should be paid for ALL the clean energy produced by the solar system, rather than just the excess generation over a particular time period, to provide a guaranteed return on investment;

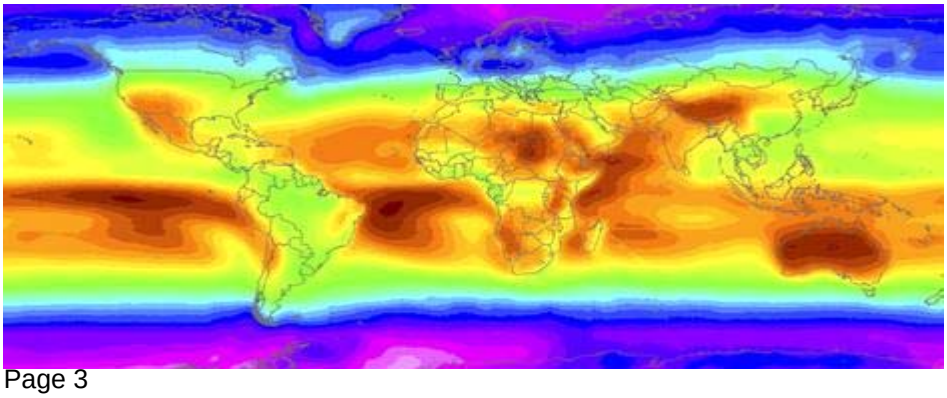
- apply to all sectors - not just the residential sector. All solar investors, including business, local councils, public buildings and churches, should be able to benefit from this policy; and

- be high enough and guaranteed for a long enough period to provide all investors with a 10-year payback on system capital cost.

Without the inclusion of the above basic measures, which have seen solar industries in Germany and Spain grow exponentially in recent years, existing and subsequent FIT policy initiatives risk being discriminatory and ineffectual and hence damaging to the solar industry and the Government's reputation.

The Australian solar advantage

- Australia is the sunniest continent in the world providing it with a significant competitive advantage for the development of a sustainable market for solar power.
- Australia is well recognised for having pioneered world-leading technology and innovation.
- Solar technology was recognised by the Howard Government's energy white paper 'Securing Australia's Energy Future' as a technology of "strategic importance".



Hot spot: The colour-coded world map, with Australia bottom right, produced by NASA to show where solar energy has the maximum effect.
Photo: *Reuters*

BP Solar: a 30-year heritage in Australia

BP Solar is one of the world's leading solar companies, manufacturing and selling solar photovoltaic (PV) cells and panels worldwide. Our key assets include manufacturing facilities in the US, India, Spain and Australia and a module assembly plant in China. Worldwide, manufacturing capacity is undergoing significant expansion.

BP Solar has been operating in the Australian market since 1985, however, the business's Australian heritage extends further thanks to its merger partner, Solarex, which had been operating in Australia since 1976. BP Solar is currently Australia's only commercial manufacturer of solar PV panels. The Australian BP Solar business employs almost 250 people directly and supports the employment of a further 1,000 people indirectly predominantly in small- to medium-size enterprises.

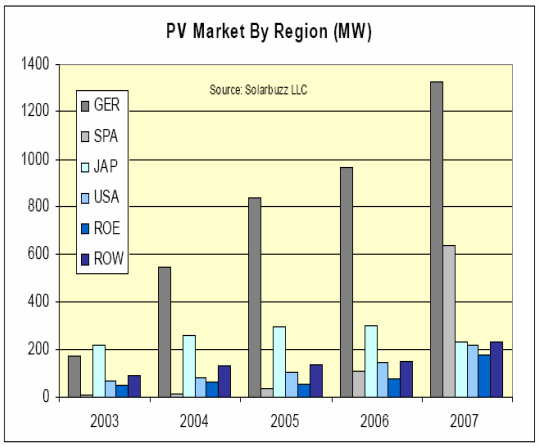
The Australian BP Solar factory manufactures approximately 50MW per annum, of which 80% is exported to markets within the Australasian as well as to India, Europe and the US. This is currently providing a revenue stream in excess of $100 million to the local business.

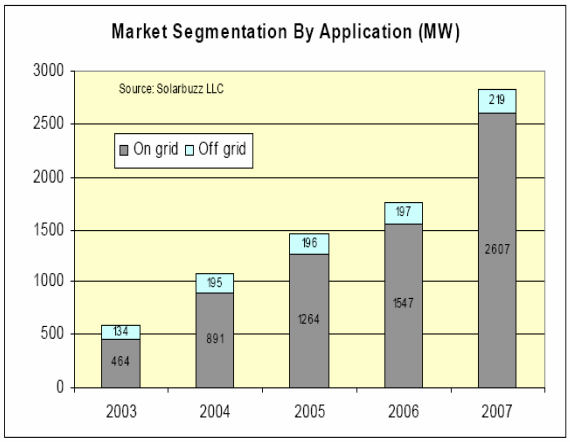
International and Australian markets

International markets and trends

Facts:

- Globally demand for solar PV in 2007 grew from 1744MW in 2006 to 2826MW – an increase of 62%.
- Annual global growth has averaged 47% in the last five years.
- Germany, Spain, Japan and US account for 86% of world solar PV market





Source: Solarbuzz

- 2007 saw the continued strengthening of existing markets (Germany, US) and the emergence of new material markets for solar PV (Spain, Italy).

- Germany and Spain accounted for 70% of solar PV installations in 2007, due to gross FITs (in place in Germany since 2000 and Spain since 2007).

- ***the*** determining factor influencing customer's decisions in both of these countries has been providing an acceptable economic return for the end customer. The incentive tariff returns (magnitude and duration) coupled with insolation levels govern investment returns which have in turn driven strong market demand.

- The Germany market continues to be driven by a strong residential market (39% of 2007 installs) and in Spain large centralised ground mount systems (91% of 2007 installations were 1MW or above).

- The US market grew by 57% in 2007, largely on the back of California's $3B Solar Initiative. Renewable Energy Portfolio Standards (RPS) have inspired two major utility scale projects (14.2MW Nells Air Force Base Nevada and 8,3MW Alamosa) and it this segment that is expected to grew rapidly in the next 5 years.

- There are no material ***Net Generation*** markets for solar PV

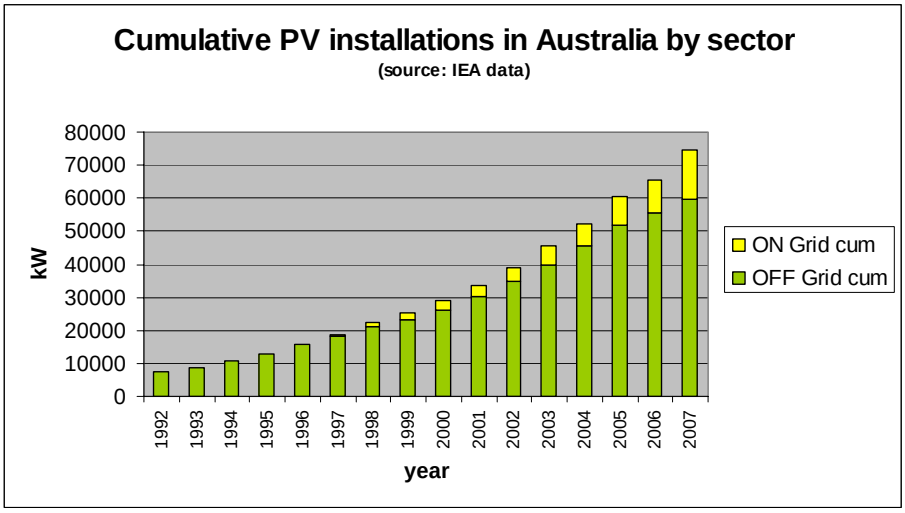
The Australian market size and shape

- Traditionally, annual uptake of solar PV has been dominated by the remote or "off-grid" market in Australia. However, uptake in the urban "on-grid" market has strengthened significantly in the last two years and it is this market where significant growth opportunities lie.

- In 2007 more than 12MW of solar PV was installed in Australia, up by 2MW from the previous year - due in large part to an increase in the PVRP rebate.

- Growth in the Australian solar industry is tracking at approximately 15-20% per annum. However, global growth rates of 47% (the consequence of overseas markets adopting supportive, long-term solar PV deployment programs) will test Australia's long term competitive position.

- The Australian Government's support (via programs such as RRPGP and PVRP) has underpinned domestic growth and in its absence the market would be significantly smaller. It is estimated that 70-80% of solar PV installations in the grid market were supported with Government funding.



Australian potential large, uptake low

Residential uptake

- Solar PV is a technology that enjoys broad scale community support; it is a visible and tangible way of fighting climate change and appeals to the Australian psyche and culture – surf, sun and sand.

- During the last two years, concerns over energy security and climate change have fuelled renewed interest in solar PV and the subsidy increase last year bought forward significant household demand.

- Unlike other low carbon technologies, such as geothermal and wind, solar PV is one of the few technologies that Australian families and households can embrace and therefore enable them to play a role in addressing climate change and contribute to creating a lower carbon society.

Commercial uptake

Adelaide International Airport

There are only a handful of large, grid-connected commercial installations in Australia. The largest roof mounted system is the BP Solar installed 200kW system on the Queen Victoria Market in Melbourne, Victoria completed in 2003.

However, in the last 12 months there has been a noticeable increase in interest in developing large scale projects and a number have been fully or partial funded by governments.

BP Solar has successfully tendered and won contracts to design, install and commission some high profile and iconic systems, including:

Cadbury Schweppes, Western Sydney	110kW
Adelaide International Airport	110kW
Adelaide Bus Terminal	50kW
NSW Parliament House, Sydney	25kW

Being involved in these installations adds to our organisation's wealth of experience in large scale projects in the region, but none of these installations would have been possible without the generous support of the governments involved.

With the introduction an emissions trading scheme, and increasing energy costs, impacting on bottom lines of businesses, the appetite to invest in renewable energy technologies has never been greater and highly likely to strengthen unabated.

The primary drivers from the commercial sector for considering solar PV are:

1. Concern about climate change
2. First mover advantage
3. A solar PV array provides a visible testament of organisations commitment to helping address climate change - on the roof where they operate (compared with wind farms in regional communities)
4. Resonates with stakeholder values – employees, suppliers, customers
5. Increasing shareholder value

Commercial sector opportunities

Worldwide, solar FIT schemes have been designed to target both residential rooftops and commercial and industrial estates.

BP Solar supports the extension of any FIT to the commercial/industrial sector for a number of reasons:

1. It enables the industry to deploy the technology at scale.
   Installations in the residential market are often limited to small 1-2kW systems and as a consequence it takes a lot longer to generate the necessary market size to enable the industry to get economies of scale.

   Getting access to commercial rooftops will enable the industry to install not just large kilowatt-size systems but also megawatt (MW) systems. In doing so, the industry is able to move down the cost curve and deliver significant cost reductions to all market sectors.

2. The output from a solar PV system correlates with the load profile from the commercial sector and thus the technology offers up the potential to reduce peak demand and deliver significant network augmentation benefits.

3. There is a policy vacuum with respect to the commercial sector that when filled will bring forward the demand that is building in this sector.

   All of todays and previous policy support for deployment of solar PV has been focused at the residential sector. However, some of Australia's largest commercial and industrial players are becoming impatient for government action and the policy framework that will enable them to invest in large scale solar PV systems.

4. In extending a solar FIT to the commercial/industrial sector, new opportunities will emerge in the solar industry and the sector. For example, new skilled employment - particularly in designing engineering solutions, developing construction capability, and in creating different approaches to this sector and attract manufacturers

Utility Scale Opportunities

A new emerging market for solar PV is in the area of utility scale projects with major utilities (like Southern California Edison in the US) announcing plans to install and operate huge solar systems and conversely, for major global solar PV players to enter into power purchasing agreement (PPAs).

The market opportunities in Australia are limited but in markets overseas with incentives in place, the trend is emerging due to an increasing interest in sourcing clean electrons and as a response to the increasing cost of hydrocarbon fuel sources.
.
Increasingly those in the solar PV industry wish to supply competitively priced electrons or kWh, coupled with a desire to move further downstream to the electricity market and the customer, this trend is likely to strengthen significantly over the coming years.

The opportunities for Australia to have enormous solar PV plants cannot be ignored. The announcement by Worley Parsons to establish the world's largest solar thermal plant is testament to the desire from the domestic market and key players for such large scale renewable initiatives to occur.

Refer appendix

Today's challenges for solar PV

1. Accessing peak energy prices – market failure

Australia's peak power needs in our major urban areas are growing each year faster than growth in demand for base load power. In some states the growth is four times larger than that of base load. This growth is being fuelled in large part by an ever increasing growth in air conditioners usage.

We acknowledge that solar PV is not a single base load power solution: the true value of solar PV generated electricity is as a peak load technology.

Solar PV is a peak load technology because the peak electricity output from a solar PV system coincides with the peak demand for electricity. With the wholesale price for electricity during peak periods sometimes stretching to 100 times the average, the value of solar peak generation to reduce this cost should be recognised.

Today a solar PV owner only receives either the wholesale rate or a modest flat retail price for the electricity generated by their system: between 4-18 cents/kWh. This price depends on the location of the household and the electricity retailer in question.

Corrective policies which reward a solar PV owner with the real value of the peak electricity generated by solar PV would significantly increase Australia's installed capacity from 25,000 systems to more than 100,000 by 2013 and 1million by 2023..

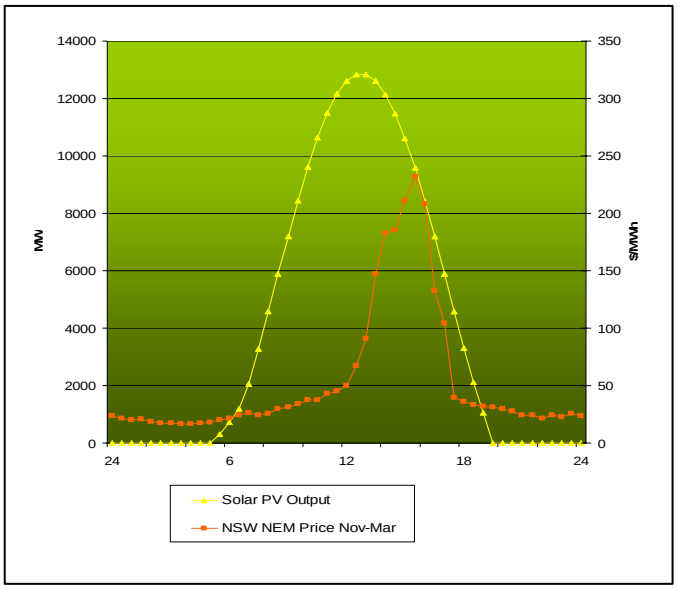


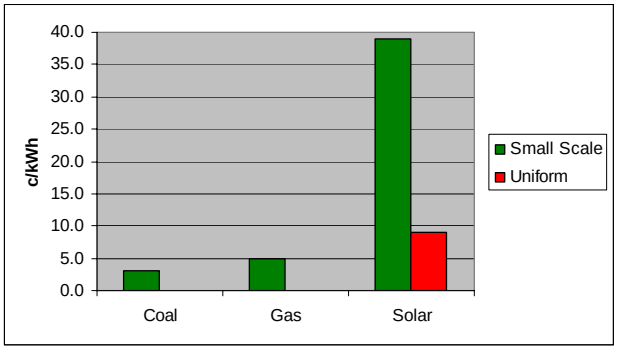
Figure 1: Current market arrangements fail to recognise the peak generation value of solar PV and therefore fail to attribute a higher tariff to the electricity generated.

2. Technology costs

- The solar PV industry has continued to reduce costs by 5% per annum over the last decade.
- Today a typical 2kW system would cost a resident approximately $24k to install (excluding Federal Government $8,000 SH&CP contribution to households under $100k) and would meet 40-50% of the energy requirements of an energy efficient home.
- For every doubling of production, costs fall by 20%. Because the economies of scale do not exist in the Australian solar industry, solar PV is not competitive today with coal or gas fired generation. However, the cost of generating electricity from conventional sources by contrast has been rising.
- The number of installations in Australia per annum is not sufficient enough to provide the economies of scale necessary for there to be discernible reduction in installed costs.

  For example, there were approximately 1,000 systems installed in NSW 2007 for estimated 20 dealers. This equates to 1 installation per week per dealer.

With a supportive policy framework that delivers industry scale, the installed cost of solar PV could be halved within the next decade.

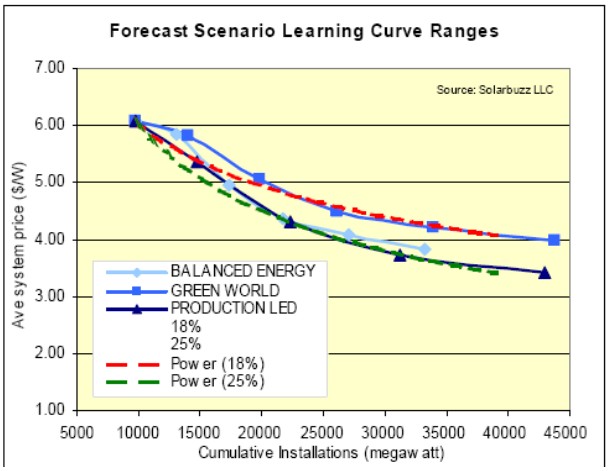


Scale Disadvantage		
Technology	*Scale (kW)*	*Cost (c/kWh)*
Coal	500,000	3.0
Gas	500,000	5.0
Solar	1.5	39.0

Figure 2: Driving scale is critical to moving the industry down the cost curve.

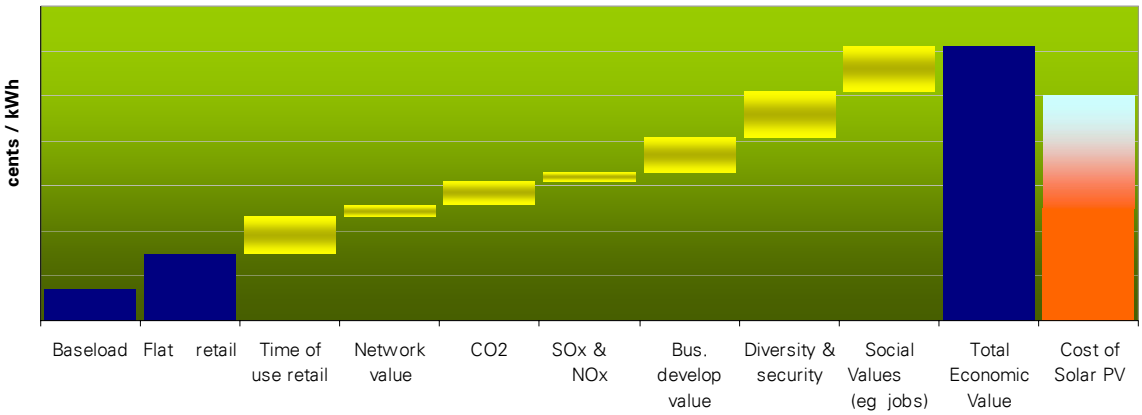
7. PV SUPPLY/DEMAND FIVE-YEAR FORECAST SCENARIOS (2008-2012)

Figure 7.1 Forecast Scenario Price/Production Learning Curve Projections



Cost versus value

To adequately compare solar electricity with other generation technologies, several value components have to be taken into account. Solar PV eliminates the complex supply chain and geographic distance between electricity generation and consumption. It spreads economic benefits such as technology investment, jobs and environmental effects into communities across the state. These and other additional values as shown in the graph below need to be fully rewarded in the feed in tariff rate.



Transmission losses- solar PV generators produce electricity where and when it is needed and therefore do not suffer from transmission losses to the same extent as large centralized power generation systems.

Network value: Fully valuing the costs associated with deferring network augmentation by having distributed solar PV systems supplying peak energy

Peaking value**:** Current market arrangements significantly under value the peak energy from a PV system – a flat averaged retail tariff does not reflect the value of supplying energy in the middle of the afternoon when it is at its highest demand.

Industry development: a strong domestic industry will be led to the creation of thousands of jobs in manufacturing, and small to medium sized businesses such as distribution, dealing and installing.

Diverse and secure energy: enhances electricity supply security and price stability against summer peaks by diversifying the energy portfolio - to the benefit of the economy.

Environmental value*:* solar PV can help prevent greenhouse gas emissions and can assist with improving air quality by reducing local pollutants.

Why feed-in tariffs?

Government intervention = material markets

The Australian Government has invested more than **$250 million** in program support for solar PV in the last five years and undoubtedly in the absence of this support the industry would be half the size it is today.

This investment has resulted in industry sales of more than $1 billion including $500 million in exports and growing each year.

There a number of Australian Government solar PV deployment programmes in place:

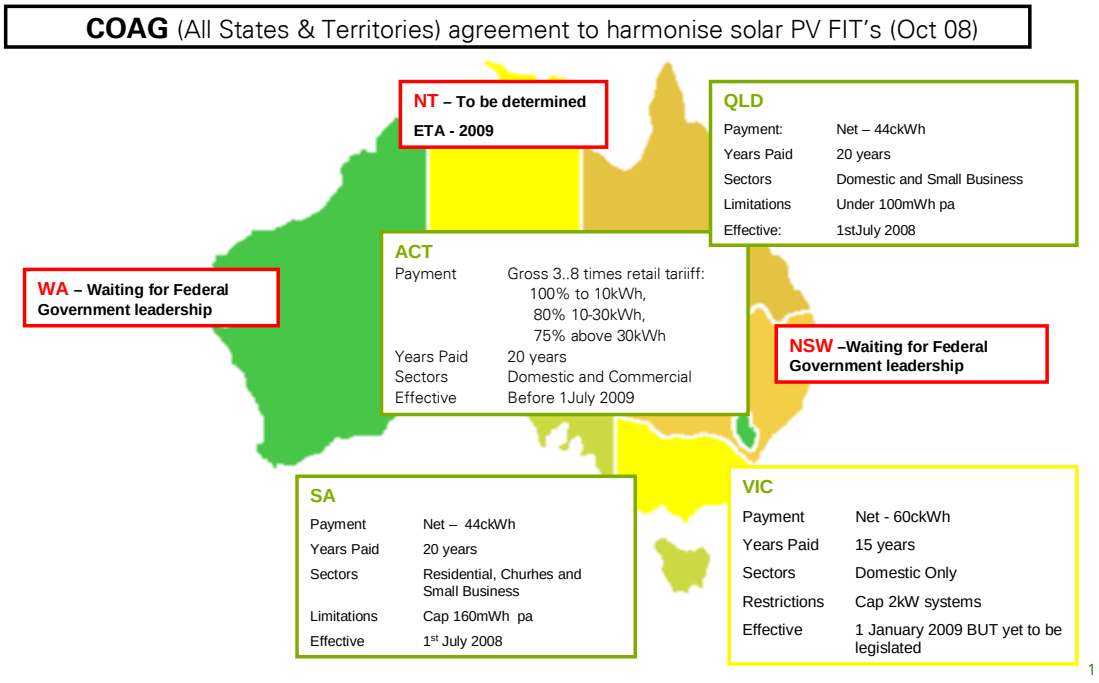
- Solar Homes and Community Plan
- Solar Cities
- Renewable Remote Power Generation Programme
- National Solar Schools Programme

In addition, there have been a number of FIT commitments made by state and territory governments to adopting such a scheme as well as commitments from state opposition parties to work towards meaningful FIT arrangements. However, there is apparent inconsistency in approach and this will only cause great distortion in the marketplace and for the industry if a national model is not adopted.

The Federal Australian Labor Party committed in the 2007 election to work with COAG to develop a consistent national approach to solar FITs. It is important to note that the commitment also extended to recognising that solar FITs pay a premium price for electricity produced and then fed into the grid.

A summary of the FIT landscape in Australia is depicted on the following page.

Feed In Tariff Progress



BP Solar believes that Government intervention will be fundamental in ensuring that the market fully values – and benefits from – solar PV's contribution to the energy market, the economy and the environment.

We believe that the purpose of any incentive should be to kick start the introduction of new technologies, to accelerate them and to drive down their costs.

We support targeted intervention, where that intervention is focused directly on addressing the market failure, and are transitional in nature, that is, time limited until the failure is overcome.

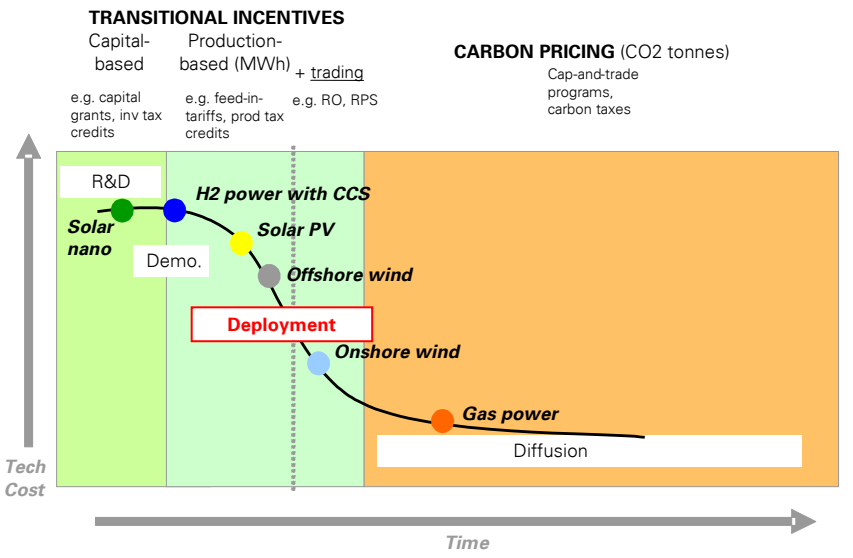
BP Solar recognises that if least cost carbon saving is the only objective, then Governments would never adopt or introduce renewable energy policies, but rather simply rely on achieving carbon reduction through Emission Trading Schemes.

However, if the objective is to create innovation to overcome the market failure that prevents long term carbon saving potential like solar from developing, then there is a justification for targeted intervention to differentiate between technologies – otherwise the cheapest, wind will predominate.

For small illiquid markets empirical evidence would suggest that FITs are both cheaper and more effective, for technologies that are at an early stage of development.

This not about "picking winners" but recognising in the case of solar PV there is a market failure that needs to be overcome with explicit price support which creates growth opportunities and in tandem proves up the technology, drives down costs, diffuses the technology and makes it accepted.

Policy Framework



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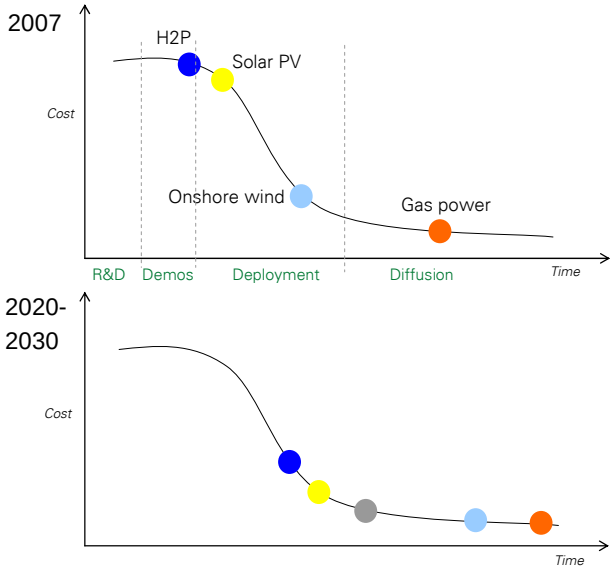
Technology maturity and cost competitiveness



Transitional incentives needed to accelerate progress of AE low-carbon power technologies along their cost curves

Level playing field allows AE technologies to compete with high carbon technologies and with each other – *without additional incentives*

5

Stern in his report The Economics of Climate Change:

Both sets of instruments have proved effective but existing experience favours price-based support mechanisms. Comparisons between deployment support through tradable quotas and feed-in tariff price support suggest that feed-in mechanisms achieve larger deployment at lower costs[57]. Central to this is the assurance of long-term price guarantees. The German scheme… provides legally guaranteed revenue streams for up to twenty years if the technology remains functional. Whilst recognising the importance of planning regimes for both PV and wind, the levels of deployment are much greater in the German scheme and the prices are lower than comparable tradable support mechanisms ….. Contrary to criticisms of the feed-in tariff, analysis suggests that competition is greater than in the UK Renewable Obligation Certificate scheme. These benefits are logical as the technologies are already prone to considerable price uncertainties and the price uncertainty of tradable deployment support mechanisms amplifies this uncertainty. Uncertainty discourages investment and increases the cost of capital as the risks associated with the uncertain rewards require greater rewards.

Stern Report October 2006

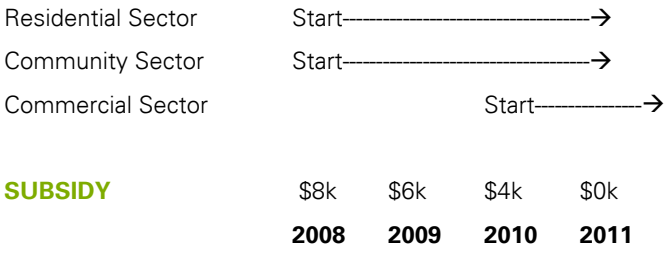
Limitations of subsidy programmes

BP Solar believes that there a number of short comings with subsidy programmes:

- they are short term in nature and therefore fail to provide the certainty required to attract meaningful and long term investment from the industry
- they are restricted to domestic operations (SH&CP – means tested and $8/watt capped at 1kW) and therefore it will take a lot longer to deliver the scale required to get economies of scale.
- they lead to suboptimal results and are an expensive measure to support deployment of solar PV and deliver carbon reduction
- moreover subsidies create an unhealthy cycle of dependency. Ultimately subsidies are tantamount to artificially propping up the industry and will fail to provide appropriate pathways to build a sustainable industry

BP Solar endorses the need for there to be a smooth transition from a rebate environment to a gross FIT regime. As follows:

Transitioning to a national gross FIT



A smooth transition from capacity based incentives to production incentives[2] will enable the industry to manage the change more effectively, adopt appropriate strategies to raise awareness and educate the market place and implement supply strategies and invest in necessary resources to meet demand from incentivising the commercial sector.

RECOMMENDATION 1
BP Solar strongly recommends for there to be a smooth transition from a rebate environment to a gross feed in tariff regime.

Building industry capacity

In Australia, solar PV is an emerging industry which has both existing capability and capacity to expand and meet future growth opportunities.

Many of the businesses that serve the market are small to medium enterprises that do not just specialize in solar PV systems but rather have suits of complementary products and services – SHW, energy efficiency etc.

In the last 12 months, these businesses responded to the increase in the rebate to $8K following the 20007 Budget by investing heavily in new warehouses, recruiting new staff, undertaking training etc.

Should a national gross FIT regime be implemented consideration of impact on the industry is required, particularly if coverage extended to the commercial and industrial sectors.

Accessing commercial and industrial estates will deliver transformational outcomes but appropriate strategies must be implemented to foster the development a skilled green collar workforce, attract and retain experienced and competent employees.

RECOMMENDATION 2
BP Solar recommends a national gross FIT be complemented by a comprehensive training and accreditation course conducted through TAFE colleges etc

Quality Control

It is absolutely essential that a FIT is accompanied by robust system processes which will help insure against inferior components, poorly designed and low power systems. Where tasks are to be performed in the design or execution of a project then the people must be competent for the required task, that is performed by someone who has acquired, through training, qualification or experience or a combination of these, the knowledge and skill enabling them to perform the required task correctly.

Compulsory quality control measures should be adopted across the value chain and should be in place prior to the FIT being effective. Whilst Australia has been adapting its processes in response to the recent market growth, transformational market

arrangements will require greater sophistication in quality control procedures. This should extend to:

1. Certification of components to Australian Standards
2. Project designed by competent persons
3. Project installations by competent persons
4. Periodic system performance audits

RECOMMENDATION 3
BP Solar recommends there be a comprehensive review of quality control processes across the value chain and including overhaul of installer accreditation arrangements and consideration of licensing arrangements.

How to structure a meaningful Feed In Tariff Scheme

The following are key elements in crafting a meaningful FIT:

Timeframe

In order to create market certainty, attract investment and deliver meaningful economic and environmental dividends:

- A Feed in Tariff (FIT) should guarantee payment to the system owner for 20 years
- And the programme should run for 20 years, meaning the FIT is paid out over 40 years (systems installed in year 20 will still earn a FIT for the following 20 years)

Payment on generation:

- The FIT should be paid on all electricity generated by the system and should move in line with inflation CPI
- The FIT should be set as a premium on top of the standard electricity tariff, so that it is independent of any variations in the latter

Payment based on scales

Residential – 10 Year Payback

1 – 10kW	Households, apartments

Commercial – 10 Year Payback

5 – 50kW	Service Stations, Fast Food outlets, community strip shopping
51 – 500kW	SME inc Warehousing, Government Buildings, Banks, Factories, car dealerships, inside CBD locations
501 – 999kKW	Shopping Centres, Warehouses, Airports

1MW	Large, iconic 'brand' buildings – Distribution Centres, Call Centres, Data Centres, Large Factories – outside CBD locations etc

Coverage

The FIT should be open to all sectors of the economy not just the residential sector

Guaranteed connection and purchase:

Electricity retailers and network providers should guarantee that solar PV systems which comply with technical connection requirements imposed by Australian Standards and State or Territory regulators will be connected and all their generation purchased.

Source of subsidy money:

- Revenue to pay for the FIT should be raised through an across-the-board levy on DNSPs (exempting the energy intensive industry). This would mean that retailers with high uptake of the FIT would not be disadvantaged.
- Alternatively the funds could be raised and deployed through a third party organisation

Uncapped System or Programme Size

To avoid creating market distortions the FIT programme should not impose caps on either the system size or annual MWs installed.. Adjustments in the FIT each year will influence the rate of installation in free and open markets.

Grid-connection agreements

The application and approval processes for connection of PV systems to the grid should be streamlined. Ideally the FiIT arrangements should be incorporated directly into this process.

Digression and Review

The FIT rate for new installations should decrease by a maximum of 7% as industry moves down the cost learning curve. This will a) encourage people to invest in a solar PV system now rather than later and b). encourage manufacturers to reduce costs.

Separately, the programme in total should be subject to review every 5 years.

Retrospective

The FIT should apply retrospectively. This will ensure the retailers do not have to maintain several different billing systems and data streams.

Gross instead of net FIT

Professor Garnuat Draft report made the following comments in respect of net generation FITs

> 17.2.2 What should the value of a feed-in tariff be?
>
> "For small embedded generation systems installed by households or firms that are consuming electricity throughout the day, it is likely that no exports to the grid will be possible. However, the benefits of embedded generation (lower transmission losses, deferred costs for network augmentation, and displacement of high-cost generation during peak periods) are present for every unit of electricity produced, not just the amount exported. A feed-in tariff based on gross metering is thus a more accurate means of pricing these benefits.9
>
> Endnotes: 9. Some argue that a gross-metered feed-in tariff is undesirable because, from a sustainability perspective, it does not encourage embedded generators to consume less electricity, whereas under a net-metered scheme profits can only be made by exporting more to the grid. **This reasoning is erroneous because the incentives to consume should come through the retail tariff paid for electricity, not through the feed-in tariff system**

BP Solar concurs with Professor Garnuat's views and furthermore believe the following 9 reasons why gross generation FITs should be supported:

1. Gross generation does not discriminate against any group in society and thus is fairer and more equitable.

Net metering arrangements discriminate against people who need to stay at home in the middle of the day. Discriminates against those that are never going to be in a position to export energy and receive a feed in tariff because their energy needs are biased differently to those that are not at home during the day.

2. Gross generation provides financial certainty

Gross metering arrangements enable any person or organization to calculate with greater certainty the income they will generate from their solar electricity system. Under net metering arrangements it is extremely difficult to calculate the income stream and therefore understand the financial merits of investing in a solar electricity system.

3. Net generation arrangements are deceptive

It is deceptive to promote solar feed in tariffs (FITs) as being a vehicle for industry development and way of making solar more economic and then underpin it with net metering arrangements which does neither.

4. Gross generation has been universally adopted by 46 countries

Gross generation arrangements have been adopted by more than 46 countries worldwide. Nowhere in the world are net metering arrangements in place – South Australia is the only jurisdiction to have legislated for net generation arrangements but this is yet to come into effect - 1July 2008.

5. Very few people or organizations would be net exporters of energy therefore net generation advantages very few

Very few people have the roof space, adequate access to sunlight or financial means to invest in a solar system large enough to enable them to become net exporters of electricity and receive the higher feed in tariff.

6. Gross generation has proven to be successful in creating markets and assisting industry development

Gross metering arrangements have led to significant growth in the uptake of solar electricity world over, and have enabled the industry to develop in those markets and deliver major cost reductions. Net generation will not deliver the market scale needed to move the industry down the cost curve.

The financial signal under net generation is too weak on its own to stimulate demand. Without additional measures (subsidies, tax incentives), markets that adopt net generation arrangements will be smaller than they could be and ultimately not be large enough to sustain an industry.

7. Solar electricity investors become far more energy conscious irrespective of gross or net arrangements

Experience in Australia has shown that solar electricity investors become far more aware of their energy demand once a solar system is installed irrespective of metering arrangements.

Net metering cannot be justified alone on the basis it will encourage superior energy efficiency outcomes.

The assessment should be made on the basis of additionality – that is, the "additional" energy efficiency savings gained as a consequence of net generation and a solar electricity system. However, there is no empirical evidence to validate the impact of net generation on energy efficiency.

8. Gross generation rewards the investor for many things

Net generation significantly under values the contribution solar electricity systems makes in regards to peak energy, greenhouse gas abatement, distributed employment

and industry development and will not deliver a financial return that will motivate commercial sector uptake.

9. Gross generation is transparent

Net generation metering does not measure the amount of renewable energy being generated nor the amount of energy being consumed. This will prevent real understanding of the contribution of solar electricity generation in mitigating peak energy demand and greenhouse abatement and conversely distort understanding about adoption of energy efficiency practices and behaviour change.

Why CPRS / RET are not enough?

BP Solar believes that an effective emissions trading system which places a price on carbon will play a contributing role in delivering significant emissions reductions at least to the economy. However, we believe that emissions trading alone will not be sufficient to deliver the incentives to enable timely deployment of a diverse range of technologies.

An emissions trading scheme needs to be complemented by technology development policies – additional incentives which facilitate investment in and deployment at scale of a portfolio of low carbon technologies such as solar PV.

Theoretically, effective and efficient markets will bring forward investment in a range of technologies through a credible carbon price. However, a carbon price alone will not sufficiently incentivise (or enable) new, higher cost (currently) technologies like solar PV. Markets will always invest in the existing, least cost solutions and thus ignore the medium to long term commercial potential of other new technologies.

For Australia, this support is not about picking winners but recognizing that technology neutral-polices will have the perverse effect of biasing the energy and environment markets to a suite of already commercial technologies. This is particularly true in the power sector, where new technology competes against the scale advantages of centralized power systems.

To accelerate the development and deployment of new, low-carbon technologies Australia should offer targeted incentives in parallel with an emission trading system. The focus should be on technologies in which Australia already has an advantage, and which, in the absence of an enabling policy framework, would never reach their commercial potential (and therefore their greenhouse abatement impact) under an emissions trading scheme.

Stern in his report The Economics of Climate Change argued:

"Technology neutral policies need to be complemented by focused incentives to bring forward a portfolio of technologies"

"Many low-carbon technologies are currently more expensive than the fossil-fuel alternatives. But experience shows that the costs of technologies fall with scale and experience" …..**Stern Report**

Renewable Energy Target - RECs

Owners of solar PV systems are able to create and trade Renewable Energy Certificates (RECs) which can help offset the upfront cost of installing a system. Today for a typical 1.5kW system, an owner receives approximately $1200 in exchange for surrendering those RECs.

Whilst the REC dollar contribution has been useful in reducing the upfront capital outlay of a solar PV system, the value of RECS is both too low and too volatile to drive a sustainable market for solar PV and will certainly not bring forward large scale installation projects. Expanding the RET to 20% by 2020 whilst welcomed will change little in developing a market for the solar PV industry - it will only continue to drive investment in the more mature and cost effective technologies such as wind.

It is BP Solar's view therefore that foregoing RECs is justifiable if a gross FIT were introduced at a level that would be high enough to reward the solar investor the full value of generating solar energy. It would be difficult to justify being able to access both RECs and FITs schemes and would only serve to cloud the market arrangements.

Low-income group protection

To insulate low income households from the inflationary effect of higher electricity prices and feed in tariff levy, there are number of approaches Governments can consider:

1. Directing a portion of the revenues from auctioning off permits under the Carbon Pollution Reduction scheme or the from the feed in tariff levy towards installing solar systems on public housing buildings and therefore helping reduce impact of rising electricity prices for the tenants.

2. Exempting concession card holders from the feed in tariff levy or in the least those that reside in public housing.

Bill drafting suggestions for inclusion:

Sec 5 Qualifying Generator (a) Retrospectivity

The Bill should not just apply to just new installations but should also apply retrospectively. Retailers will find it expensive and problematic to manage separate systems for old and new installations and therefore pay different rates. Furthermore, under this arrangement it would be unclear as to how to pay owners that upgrade their systems.

34D (3) Technology targets

BP Solar does not support having targets for certain technologies set within the Bill. This has the potential of distorting the market and destabilising industry especially if the technology is not commercial when the target is reached and the FIT removed.

34D FIT rates

The FIT rate needs

1. To be an addition to electricity prices so that the FIT moves with changes in electricity pricing

   AND

2. Furthermore the FIT should be indexed to inflation.

34D (10) Maximum decrease – 10%

The maximum decrease the Minister is able to deliver is too high and left as is will undermine industry confidence.

1. The review of rates should be linked to improvements in technology cost. This will encourage manufacturers to continually seek to reduce their costs.

2. The maximum decrease should be limited to 7% not 10%.

34F Register

There is a need to ensure processes are streamlined and simplified but the value of having a reqistry is unclear unless for large scale commercial systems. For small distributed systems additional rules and regulations impose constraints on industry growth and complexity in doing business.

34G Payments

Refer appendix for process adopted in Spain

There are many market and institutional barriers faced by solar PV investors, and the obligation on the generator to lodge an annual return will only add to this unnecessarily.

Rather than placing the onus on the owner to submit returns to a Regulator, it would be simpler if the electricity retailer supplied that information to the Regulator who could then in turn make payment to the owner.

Further it should be suggested that the retailers are obliged to pay out credits on accounts to the customer every quarter unless otherwise nominated by the customer that they wish to carry forward the credit.. This allows for the fact that in winter, some systems might not produce more energy than being consumed and therefore the customer may wish to offset any owe debits from the prior periods credits.

However, all accounts must be cleared at a minimum annually, that is, the customer can only carry forward amounts for a maximum of 12 months.

Guarantee grid access

The Bill should include an obligation on the retailer to buy the electricity.

BP Solar's Vision for Australia

1. Solar POWERED Nation

BP Solar's vision is to transform Australia into a solar POWERED nation and enable everyone to become the CEO of their own power station through the introduction of a gross national FIT which provides a signal that is characterized as being:

Long – in place for 20 years
Loud – high enough to provide a 10 year payback
Legal – embedded in law

RECOMMENDATION 4

BP Solar asks that Australia's policy makers and decision makers, champion the adoption of a nationally consistent gross solar PV FIT which:

(1) Is for GROSS generation – that is, the premium applies to ALL the clean energy generated from the system not just the excess exported back to the grid

(2) Applies to all sectors of the economy – businesses, local councils, public buildings, churches, shopping centres, airports.

(3) Is high enough and long enough to provide a 10 year payback on system capital cost

(4) Is legally bidding – embedded in law

2. Grid parity

Solar PV is creeping towards cost competitiveness in many parts of the world (California, Germany). Similarly, in Australia, it is conceivable that the industry will achieve grid parity within the next decade.

However, the key factors which will influence the speed at which this is achieved include:

- Continual lowering of costs
  EG accessing cheaper silicon feed stock

- Gaining economies of scale
  EG delivering supply chain efficiencies and therefore reducing installed costs

- Improving module efficiencies without consequential increase in costs

- Rising costs of conventional power and inflationary impact of carbon reduction scheme
  EG a carbon price

3. Size of opportunity in Australia

Economic modelling conducted by BP Solar and verified by the UNSW would suggest that an Australian gross solar FIT commencing in 2009 would, by 2023 would result in:

Over 3GW of new installed solar PV installations

Reaching over 1 million homes by 2023

Create over 9,000 new skilled jobs

Avoid over 4 million tones of greenhouse gas emissions

Inject significant private investment and capital into Australia's energy sector

And would cost less than a cup of coffee per resident per quarter.

RECOMMENDATION 5
BP Solar recommends there be rigourous economic modelling undertaken to fully cost and determine the net economic benefits associated with introducing a gross national FIT. This should be conducted in conjunction with key industry representatives (CEC PV Directorate) to ensure accuracy of the assumptions feed into the model and therefore result.

Appendices

PG&E plans big investment in solar power

Ilana DeBare, Chronicle Staff Writer

Friday, August 15, 2008

San Francisco Chronicle

Pacific Gas and Electric Co. announced plans Thursday to buy 800 megawatts of photovoltaic solar power from two Bay Area companies - a giant deal that would provide enough electricity to power 239,000 homes and would create the country's first utility-scale photovoltaic plants.

PG&E agreed to buy 550 megawatts from OptiSolar, a relatively new Hayward firm that would install thin-film solar panels on 9.5 square miles of ranchland in San Luis Obispo County.

It would buy an additional 250 megawatts of power from SunPower Corp., a solar industry leader based in San Jose that would use an additional 3.5 square miles of San Luis Obispo land.

Energy experts said the purchase could change the face of the renewable energy industry by showing that photovoltaic power can be affordably produced on a large, centralized scale, not just on the rooftops of individual homes and businesses.

"This scale is 10 times larger than what was being talked about awhile ago," said Daniel Kammen, director of the Renewable and Appropriate Energy Laboratory at UC Berkeley.

"This makes large-scale solar an increasingly likely and large part of the energy portfolio in California and the West," said V. John White, director of the Center for Energy Efficiency and Renewable Technologies in Sacramento.

PG&E and California's other utilities are under a state mandate to generate 20 percent of their energy from renewable sources such as solar, wind and geothermal power by 2010.

They now remain far from that goal: PG&E received just 11.4 percent of its energy from renewable sources in 2007, while Southern California Edison and San Diego Gas and Electric got 15.7 percent and 5.2 percent of their respective power from renewables.

Tiny percentage

And solar makes up a particularly tiny share of that - less than 1 percent of PG&E's total power.

However, PG&E has signed a spate of solar contracts over the past year aimed at expanding its supply of renewable energy.

Together with the 800-megawatt deal announced Thursday, these solar contracts would increase renewable energy to 24 percent of PG&E's portfolio by 2013, utility officials said.

"We will continue to explore such innovative technologies as we aggressively work to increase the amount of renewable energy we provide our customers," said Jack Keenan, chief operating officer for PG&E.

The contracts announced Thursday are significant because they involve photovoltaic power, a solar technology that uses silicon-based panels to convert sunlight directly into electricity.

This is the kind of solar power found on the rooftops of homes and businesses. But until now, it has been too expensive for utilities to use on a large and centralized basis - costing about 40 cents per kilowatt hour, compared with 10 cents for natural gas and 12 cents for wind power, according to Severin Borenstein, director of the UC Energy Institute. (A kilowatt hour is the amount of electricity needed to operate a 100-watt light bulb for 10 hours.)

Instead, utilities seeking large-scale solar plants have generally pursued a technology called solar thermal, where concentrated sunlight is used to heat a liquid that generates electricity with a turbine. Solar thermal typically costs about 18 cents per kilowatt hour.

Competitive rates

PG&E officials said their contracts with OptiSolar and SunPower would provide power at rates competitive with other renewables. That would amount to a major reduction in the cost of photovoltaic power.

But officials declined to say precisely what rates they would be paying. They said the contracts would not affect electricity rates paid by consumers.

"If they can get the costs down to the range they're talking about, that would be a real major step," said UC's Borenstein. "But we don't know exactly what the numbers are because they're not being made public. I'm wondering why there isn't more transparency in this."

Economies of scale

OptiSolar and SunPower said they are able to offer power at a lower rate than traditional photovoltaic projects for a variety of reasons, including economies of scale, technological advances and efficiencies in production.

While hailing PG&E's photovoltaic contracts as a potentially big step forward, some industry experts cautioned that there still are some hurdles to cross before those 800 megawatts of power become a reality.

Both of the plants will need approval from state and local government, where they may run into opposition from environmentalists because of the sizable amount of land involved. PG&E will have to develop transmission lines to move the power from San Luis Obispo to its customers. And OptiSolar and SunPower will need to finance construction of all those solar cells.

"A power purchase contract is one thing, but where are the bankers?" said White. "They are going to need hundreds of millions of dollars."

PG&E has said the deals are contingent on Congress reauthorizing several tax credits for renewable energy that are due to expire at the end of this year. Although there is broad bipartisan support for the credits, their renewal has been caught up in the debate over other controversial issues like offshore oil drilling and how to pay for the tax credits.

"This is contingent on the (renewable-energy tax credits) being reinstated," Borenstein said. "If Congress screws up and lets that lapse, this could be put on a shelf."

bp solar

WorleyParsons
resources & energy

Media Release 12 August 2008

AUSTRALIA SET TO HOST WORLD'S LARGEST SOLAR PLANT

Australian professional services company WorleyParsons today launched a stud which the company expects will see Australia hosting the world's largest solar energy plant within three years.

The Chief Executive Officer of WorleyParsons, Mr John Grill, said: "The world is on the cusp of a solar energy revolution and Australia is uniquely placed to sustain a solar energy industry, possessing some of the highest intensity solar resources around the globe. A solar facility a single square kilometre in size could power 50,000 households.

"Our objective is to deliver 40% of Australia's additional renewable energy need through solar-thermal power by 2020. We believe this is realistic and achievable based on our experience with similar solar-thermal plants around the world," he said.

WorleyParsons' study is locating potential sites for AST plants all over the country and is demonstrating the financial viability of solar-thermal power for Australia.

"We already have some of Australia's largest companies backing our study. These companies see the potential and are funding this study completely; it will not cost taxpayers a cent. The next step is to identify the first development sites and roll out the first plants shortly thereafter," Mr Grill said.

The companies funding the study in addition to WorleyParsons are BHP Billiton, Rio Tinto, Woodside Energy, Wesfarmers Resources, Fortescue Metals Group, Verve Energy, Western Power, Water Corporation of WA and Delta Electricity.

At the present time eight solar energy plants are being constructed in Spain, Algeria and Morocco and 10 are planned or under construction in the United States. Solar-thermal projects are also planned for Israel, Mexico, Iran, China, South Africa and Egypt.

Registration Process in Spain

4 A power register operated by the Central Administration will facillitate the coordination and orderly development of the sector