CAN SOLAR PV BE A "BUSINESS AS USUAL" ENERGY OPTION FOR QUEENSLAND?

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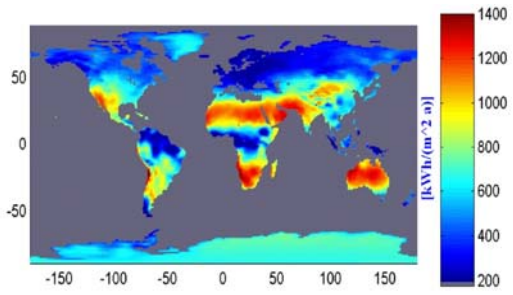
To Begin With



Photovoltaics – Global Costs March 2010 (Module Retail)

Solar Electricity (Utility-Scale)	US19.37 cents per kWh Down 0.13 cents
EUROPE (Average System Price)	€4.14 per Watt Down 5 Cents
UNITED STATES (Average System Price)	US$4.24 per Watt Down 3 Cents
Number of Prices <$4.00/Wp	394 (Up 1) (28.8% of survey)
Lowest Mono- crystalline Module Price	$2.13/Wp (€1.55/Wp)
Lowest Multi- crystalline Module Price	$1.74/Wp (€1.27/Wp)
Lowest Thin Film Module price	$1.76/Wp (€1.28/Wp)

Note:
-module cost ~50-60% of total costs of PV system
-AU prices aligning with US prices

Photovoltaics – Installations (Top 10)

Power Station	Country	Capacity (MW)	Production (Annual GW-h)	Notes
Olmedilla Photovoltaic Park	Spain	60 (2 x 30)	85	Completed September 2008
Strasskirchen Solar Park	Germany	54	57	Completed 2009
Lieberose Photovoltaic Park	Germany	53	53	2009 / 2010
Puertollano Photovoltaic Park	Spain	50		Completed 2009
Moura Photovoltaic Power Station	Portugal	46	93	Completed 2008
Kothen Solar Park	Germany	45		2009 /2010
Finsterwalde Solar Park	Germany	42		2009 / 2010
Waldpolenz Solar Park[417]	Germany	40	40	550,000 thin-film CdTe modules. Completed December 2008
Planta Solar La Magascona & La Magasquila	Spain	34.5		2009 / 2010
Arnedo Solar Plant	Spain	34		Completed October 2008

The Australian Solar Scene – Top Installations

	Location	Size	Date	Type	Manufacturer	Installer
1	Adelaide Showgrounds	1MW	2010	Fixed CdTe	First Solar	Solarshop
2	Singleton Energy Australia	400kW	1997	Fixed c-Si and a-Si	BP Solar, Unisolar/Canon	Energy Australia
3	Bendigo - Central Victoria Solar City	352kW	2009	Fixed Panels, Trackers and Batteries	Yocasol Panels, Fronius Inverters, Energel Batteries	PSG Elecraft
4	Ballarat - Central Victoria Solar City	333kW	2009	Fixed Panels, Trackers	Sharp Panels, Sharp Inverters	Eco Energy Solutions
5	Crowne Plaza	305kW	2008	Fixed c-Si	Sunpower	Sunpower
6	Hermansburg	240kW	2007	Concentrating Dish	Solar Systems	Solar Systems
7	Lajamanu	240kW	2006	Concentrating Dish	Solar Systems	Solar Systems
8	Yuendumu	240kW	2006	Concentrating Dish	Solar Systems	Solar Systems

Acknowledgement: APVA

The Australian Solar Scene – Planned

	Location	Size	Date	Type	Manufacturer	Installer
1	University of Queensland	1.2MW	2010	Fixed c-Si Panels	secret	secret
2	Illparpa	1MW	2010	to be announced	to be announced	
3	Marble Bar - TBC 2010,	300kW	2010	Tracking c-Si	Sunpower	Sunpower
4	Alice Springs Airport	260kW	2010	to be announced	to be announced	
5	Nalangine	200kW	2010	Tracking Panels		
6	Magnetic Island	100kW	2010	Tracking /Fixed Panels	Kyocera	Ergon Energy
7	Perth Zoo	296kw	2010	Fixed Tilt system	Sunpower	Sunpower
8	Perth Arena	111kw	2010	Fixed Tilt system	Don't know	Synergy
9	Cararra Stadium Solar Roof	?	?	Fixed Panels	to be announced	to be announced

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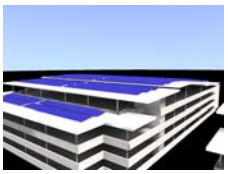
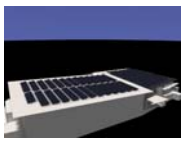
- 505kW ground mounted tracking system (WA East Pilbara – Horizon Power & SunPower) due for completion late 2009?
- 154MW (!) heliostat solar concentrator powers station (Mildura, North-West Victoria – Solar Systems

The UQ St Lucia MW Array

- 1.2MW Flat Panel c-Si (3 roofs) – largest in AU; one of the largest University arrays anywhere
- 1,750 MW hrs / annum (conservative); $6.6M of simple avoided electricity costs in 14 years
- 5% of peak power needs; 1,750 metric tonnes of CO_2 saved / annum (330 cars off the road)
- $7.75M project ($1.5M QLD State Government; $1.5M technology partners; balance UQ)
- Energy infrastructure; powerful tool for research, education and public engagement
- Commercial-industrial scale project "reducing the risk"
  - How much energy will be produced?
  - How do we optimise the output?
  - Who can build these types of installations?
  - How much should they cost to establish and run?
  - What is the quality of supply?
  - Can we use it to peak load shift (Phase 2 storage)?





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Building Integrated Photovoltaics – Flexcell (G24i, UniSolar)

THANKS FOR YOUR ATTENTION