

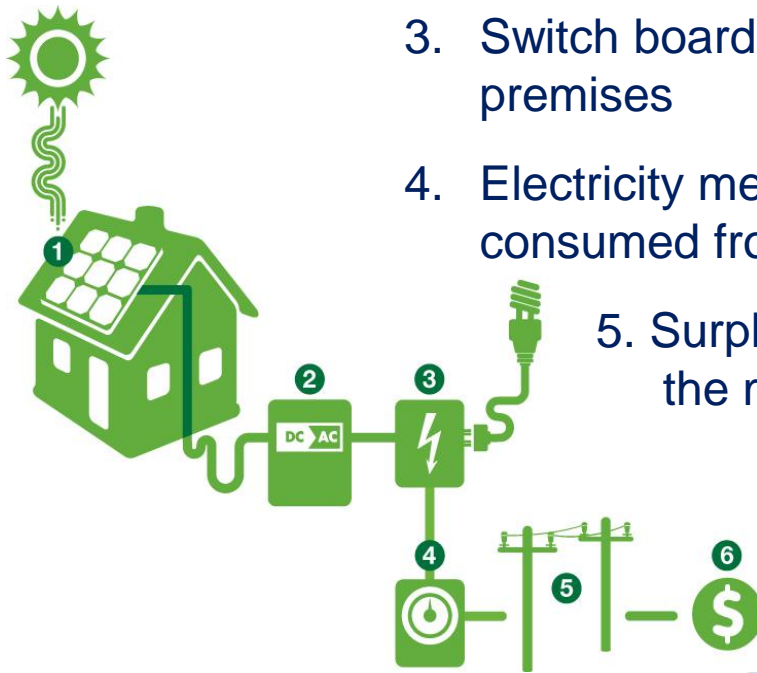
Selling Energy from Solar

AIE Perth
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perthenergy 

How Solar PV Systems Work

1. Sun shines onto solar panels generating electricity
2. Inverter converts solar DC current into AC for customer use
3. Switch board channels AC power into customer premises
4. Electricity meter records the energy sent to and consumed from the grid
5. Surplus energy flows through to the main grid for use elsewhere (if permitted to export)
6. Savings on customer grid supply power bill – potentially on total power bill



Commercial Options

1. Direct sale to customers
2. Lease
3. Power Purchase Agreement

All solar options require grid supply back up

None of the options specifically require generation, distribution or retail license if <30kW and involves NO export – but this needs confirmation

PPA to residential does need Retail License

If the customer has an existing contract with a Retailer, the Retailer's authorisation for solar PV installation is required due to:

- Existing contract price & T&Cs based on existing demand profile
- Responsibility for customer network issues stay with Retailer under ETAC
- Fixed costs of back up grid supply (EB trading, standby, associated gen & network capacity, annual network charges, market costs) stay with Retailer

Support from Perth Energy

- PE supports solar PV at utility scale or customer premises
- PE is the first independent retailer in WA to offer buy-back
- PE has facilitated >2500 kW commercial solar for our customers through MOU with third party solar PV system sellers
- Our ESAs deal with specific solar PV related scenarios, with repricing of grid electricity rates required post PV installation to maintain supply reliability to customers and recover fixed costs
- PE has a partnership with SunEdison to offer solar PPAs to all WA customers
- PE-SE arrangement does not preclude PE continuing to work with solar PV system sellers for non-PPA offers
- Solar PPAs require financing capability so not for everyone

PE - SunEdison

- SunEdison has strong brand lineage as a technology pioneer
- Public listed company in NYSE (SUNE) since 1966 and one of the top 3 energy suppliers in the US with a market cap >\$6 billion, now the largest renewable energy developer in the world
- Has extensive experience in designing, developing, financing, installing and maintaining Solar PV projects across the globe, with >2 GW of solar PV projects under its portfolio across utility scale, commercial , industrial, residential, off grid and hybrid solar
- Has strong solar financing capability, including non-recourse financing of >USD 6 billion raised so far, and recently launched TERP, PV-focused yieldco/infrastructure fund, which has been heavily oversubscribed
- Has approved \$110m fund from Australian CEFC to seed financed products such as PPAs to residential & commercial clients Australia wide
- Has own installation and post-sale support capability to back up performance warranties – SunEdison recently acquired Energy Matters in Australia

PE - SunEdison

- PE – SE partnership will be serving well PE's customer base of >2000 and other C&I users in WA
- Will help PE promote clean energy with all energy users
- Continue PE's pioneering tradition in renewable energy supply in the SWIS – we were first in selling landfill gas based energy to the contestable market over a decade ago
- Align with PE's strong customer focus by offering combined solar and grid supply through innovative pricing and terms
- Enhance PE's value proposition in offering advisory services on Energy Efficiency to consumers
- Help secure price stability for customers for the long term

PPA Proposition

Length of contract	10 to 20 year terms, with flexible extension and buyout options. Equipment ownership title would be transferred to customer upon buyout or at end of term
Cost of energy	Customer to purchase all power generated at a fixed price (\$/kWh), with set annual escalation rate
Purchase volume	Customer billed for all energy generated by the solar PV system, this volume being less than total peak consumption
Payment Terms	Flexible payment options including monthly direct debit
Construction, O&M, Insurance of System	PE-SE will assume risks relating to construction & insurance and provide comprehensive suite of operations and maintenance servicing
Power Generation	Customer pays for energy generated by the system and are protected against technology and weather risks
Security Creation and Easement	PE-SE will require access rights and PPSA registration
Termination of PPA	Allowable with some break costs depending on circumstances
Sale of Premises	Transfer contract obligations to the new owner subject to credit check

PPA Proposition

- PE is offering solar PV PPA to all customers, with or without grid supply from PE (eg. tariff customers)
- PPA is better than direct sale as customers don't have to pay upfront for solar PV systems or worry about post sale support – 4 out of 5 solar PV sellers exit the market within 4 years
- PPA is better than Lease as customers don't need to worry about system performance – customers only pay for delivered energy
- PE can structure solar PV PPA within a complete grid supply deal that is short or long term, with immediate savings on the total power bill even after grid supply contract repricing from PE for existing customers
- Hybrid or integrated supply offers from PE make it easier for customers as PE deals with the network provider directly
- Customer on leased premises will need owner's approval, which is usually given as the premises carry added re-sale value with the addition of solar

Application Process

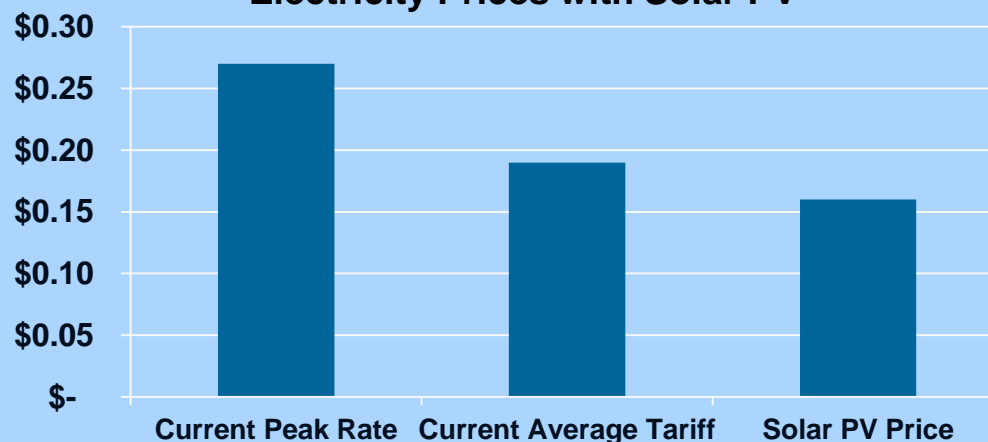
- PE applies to WP on behalf of customer; WP makes assessments and approves if the system meets technical requirements
- Application to customer's Retailer if under contract to ensure there is no contract breach – price revision may be required for Retailer to recover costs
- Application to WP for technical approval of the proposed system – the process is different for <30kW; 30-150kW; >150kW
- <30kW is an application to connect embedded generation; 30-150kW is first an enquiry to WP followed by an application for connection; >150kW is an application for medium size power station with stricter criteria
- Retailer reference number needed for systems up to 30 kW: Retailer submits a miscellaneous service order to WP for Meter Reconfiguration
- For >30kW systems, Retailer submits Electricity Transfer Application Form (ETAF) to WP as proof of non-objection, to which WP acknowledges by allocating Access Sponsor to the job
- WP's approval for the solar PV system means WP approves metering to be installed

Customer Example

Illustrative SME Customer Solar PPA Solution

Max Demand	230 kW
Load Factor	52%
Peak Usage	50%
Current Electricity Spend p.a.	\$241,000
Solar Array Size	60 kW
Solar Yield Estimate p.a.	105 MWh
Term	10 years
Escalation p.a.	3%
Solar PPA Price (c/kWh)	16.0 cents
Total Savings p.a.	\$11,600
Total Savings p.a.	4.80%

Electricity Prices with Solar PV



Advantages of PPA

- Removes burden of ownership – SE constructs, owns, operates and maintains the PV system
- Performance assured – PE-SE Solar services monitor centrally 24/7, have professional staff to analyse performance issues, and is incentivised by lost revenue if system is not performing
- Electricity remains an operational expense – no capex outlay, customers maintain capital for core business
- PPA hedges against power price risks – escalation within acceptable RBA inflation band
- Built-in redundancy
- Potential to expand or add-on new technologies as required