



TOWN *of*

EAST FREMANTLE

EAST FREMANTLE 

CARG

CLIMATE ACTION REFERENCE GROUP

All Things Rooftop Solar Power

“Together, We Can Power Up WA’s Transition to a Clean Energy Future”



slido

848205



ToEF Climate Emergency Strategy and CARG

Seven Strategic Objectives



Council will encourage the community to transition to zero emissions by 2030.

Council's Action:

Engage community in Town's energy transition story

Uptake in East Fremantle



945

27% of East Fremantle homes

East Fremantle Ranking



149th

out of 1,524 suburbs

White Gum Valley – 33%

Beaconsfield – 28%

Fremantle – 16%

Melville – 30%

Palmyra – 22%

North Fremantle – 13%

Bicton – 29%

Mosman Park – 22%

Roof Top Solar Panel Overview
Democratisation of Energy
Ian Porter and Fraser Maywood

Sustainable Energy Now !
<https://www.sen.asn.au/>

About SEN



About Us

We are a grassroots not-for-profit member based advocacy group promoting Sustainable Energy Now! Supported by the best science and our own modelling and simulation we advocate on how renewable energy can meet Western Australia's electricity needs safely, reliably, cleanly and affordably using solar and wind, firmed by the likes of batteries and seasonal (long duration) storage. WE HAVE NO COMMERCIAL INTERESTS.

Our Vision

Our 2030 vision is to phase out the majority of fossil fuel-based energy sources in WA and transition towards 100% renewables for power generation and to enable the grid to decarbonise other sectors including transport, industry, commercial and domestic.

Our Mission

Our mission is to model and promote practical, affordable strategies for the adoption of renewable energy toward a sustainable global future.

Our Actions

We provide presentations, submissions and briefings to government agencies, corporations, media, schools, community groups, politicians and hold public events.

Basics



- Systems are sized according to their power output (kW)
- Electricity is purchased on energy units (kWh) - If you use one kilowatt of power for an hour you've used 1 kWh and Synergy will bill you accordingly (Synergy is the state owned regulated monopoly for residential electrical power in most parts of WA ... East Coast electrical market is deregulated)
- Western Power looks after the transmission and distribution ('poles and wires')
- Solar panels are also called Photovoltaic (PV) module
- You don't need a home battery ... discuss this later

Economics

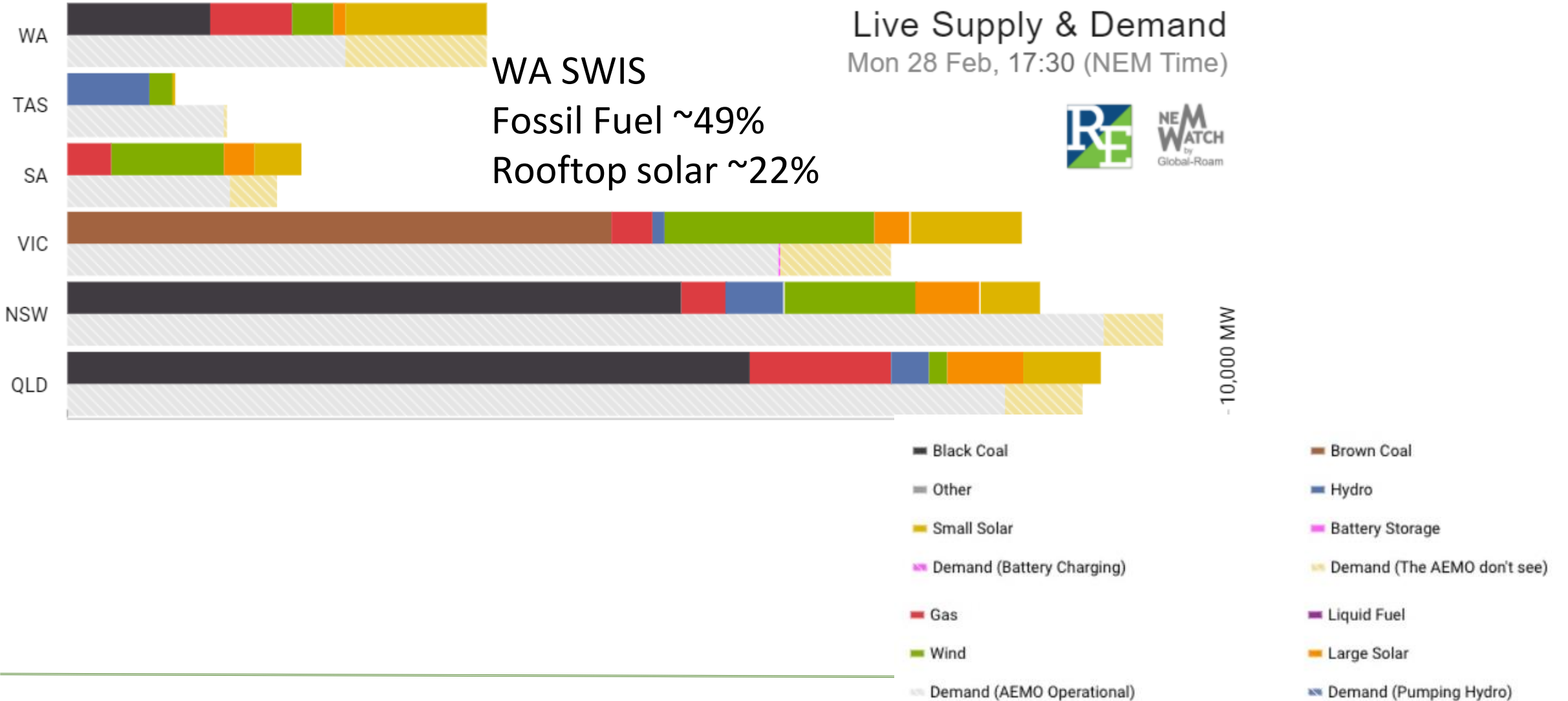


- System size depends on circumstances but typically a 3-5kW system is sufficient for most households
- January 2022, approx. prices for solar panel systems fully installed, <https://www.solarquotes.com.au/> are:
 - 3kW (approx. 10 panels): \$3,500 – \$5,000
 - 5kW (approx. 16 panels): \$4,500 – \$8,000
 - 10kW (approx. 34 panels): \$8,000 – \$12,000
 - 15kW (approx. 50 panels): \$13,000 – \$18,000
- Distributed Energy Buyback Scheme (DEBS) - Electricity net exported at peak times between 3pm and 9pm will earn ~10c/kWh; Electricity net exported at all other times will earn ~2.75c/kWh (scheme dependent).
- Typical payback period is 3-5 years (i.e. a good investment)
- The planned solar curtailment that momentarily switches off the export to the grid will have a negligible impact on households



Carbon Emissions

- Rooftop solar will help fuel switching and reduction in carbon emissions
- WA state government 2050 net zero policy + sectoral emissions reduction strategies



Carbon Emissions

- Early State Government investment in infrastructure (e.g. transmission) required to allow more private wind power into the South West Interconnected System (SWIS) in order to meet state's overall 2050 targets

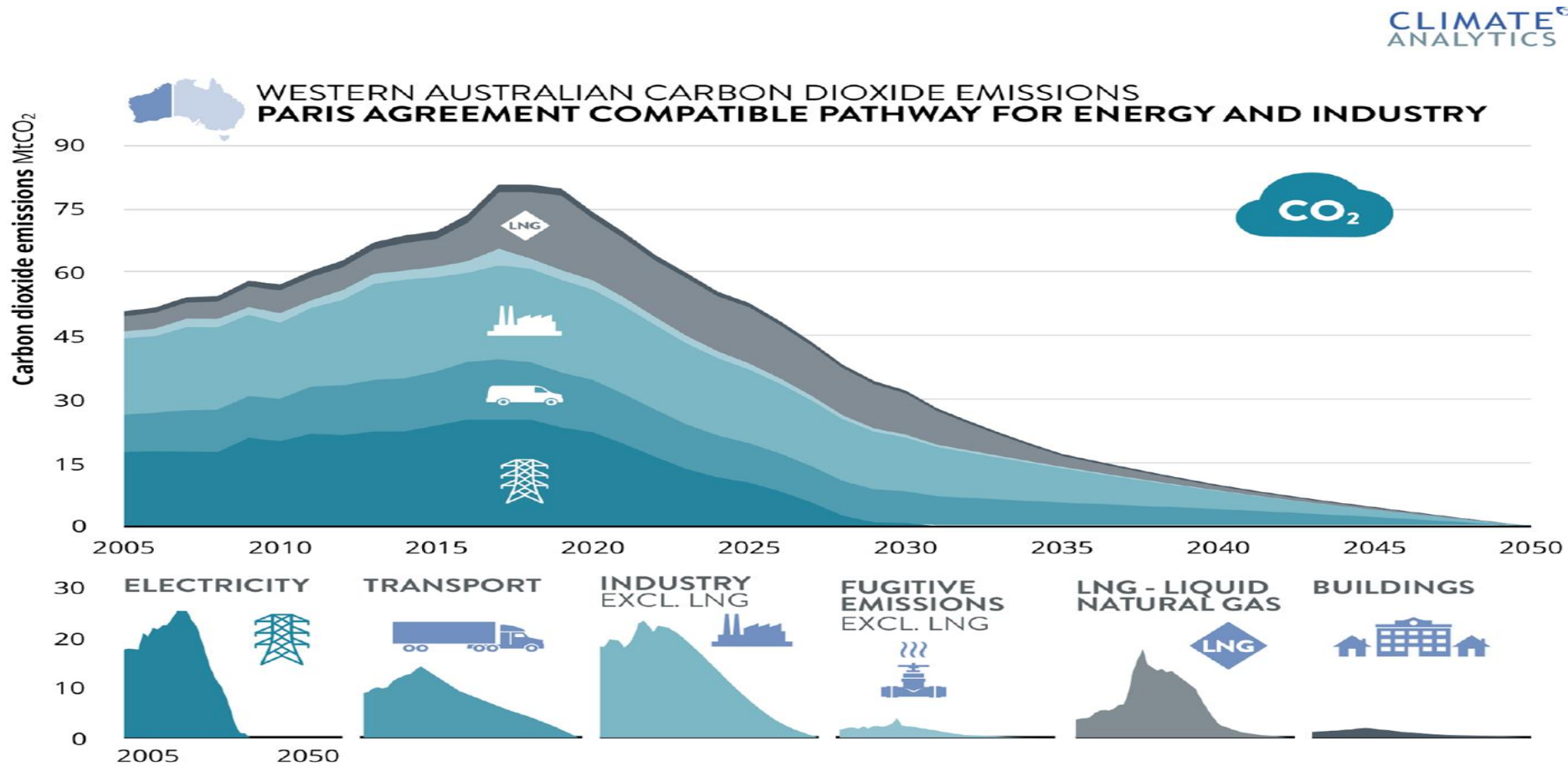


Figure 1: CO₂ emissions pathway for each of the sectors and energy and industry following transformation is consistent with the Paris agreement in each of those sectors. Total CO₂ emissions peak around 2020 and decline to about 37% below 2005 levels in 2030, for total budget of around 950 MtCO₂. Excluding the LNG industry, energy and industry CO₂ emissions would reduce by about 53% by 2030 below 2005 levels, for a total budget of 716 MtCO₂.

Will it work for me?

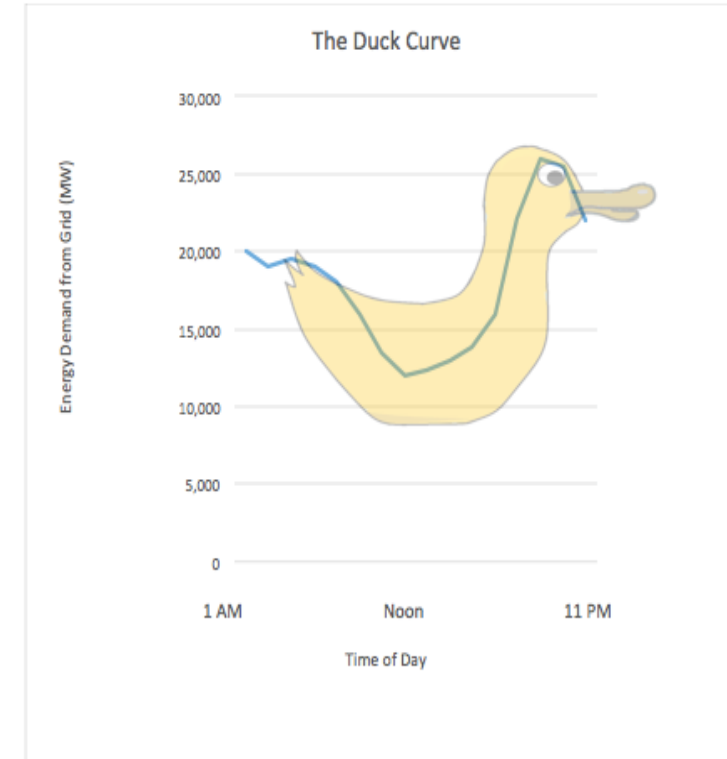
- Proprietary Software helps suppliers check for shade prior sizing and quoting system
- Get three quotes from reliable suppliers - <https://www.solarquotes.com.au/>
- Check with local council on any known supplier problems
- Rentals - discuss with your landlord or agent – topic comes up a lot – it is possible
- Apartment blocks - discuss with your landlord or agent - it is possible
- Heritage – check and discuss with your council planning dept - it is possible
- East Freo PV installation ~25% of households versus ~30% nationally

How well do solar panels work in the shade?



More in-depth stuff

- ~1 MW of rooftop solar entering the WA energy system each DAY!
- ~2GW of rooftop solar in WA – largest grid generator and legacy installations uncontrolled
- Too much of a good thing:
 - Impact on existing coal-fired fleet that needs to ramp up and down
 - Electricity Grid stability – minimum power demand May and October when roof top solar output is high and air conditioning load is low
 - Need for the Energy Market Operator to intervene to curtail output for a short period of time - WA state government are managing this as part of their Distributed Energy Resources roadmap ...
- Electric Vehicle cars (also trucks and buses) battery is 5 x that of a home battery – vehicle to load (power point in car), vehicle to home and vehicle to grid (bi-directional charging) are all coming, soonish
- EVs connected to grid with slow and fast chargers will be a great asset to owners and the grid – *potential problems have largely been solved*
- EV charging from home solar / domestic system
- EV policy / encouraging EV take up



Batteries

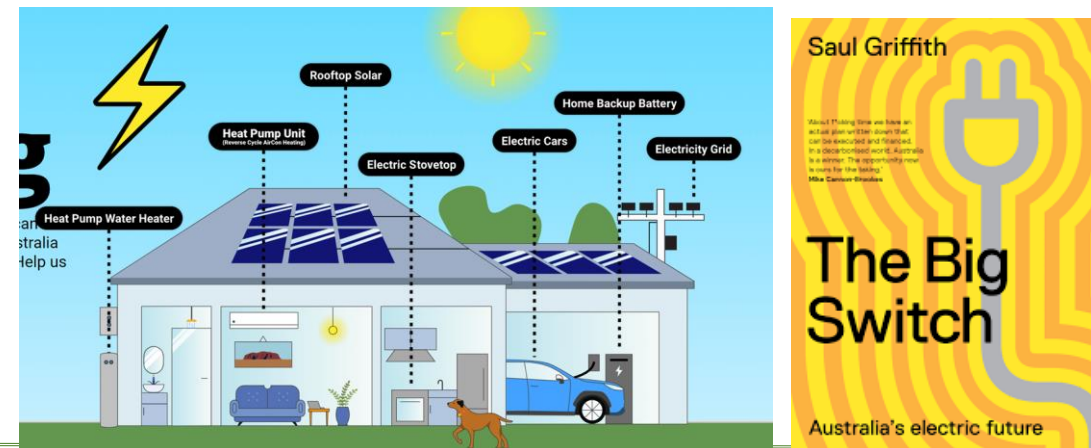
- Home batteries (\$7-15K depending on size and configuration, rebates) will help decarbonisation - economics are marginal at the moment be an early adopter.
- Country and rural property owners may consider the issue of power availability due to high number of power outages.
- EV connected to home is attractive, expensive ATM – not yet available in WA
- Community batteries:
 - Batteries located in the community to help manage network issues and solar storage – with / without households having access to renting storage. Synergy / Western Power PowerBank trials
 - Batteries owned by a community for their sole benefit (rare) [Powerledger](#)
- Utility scale batteries (100MW / GW scale)– very useful for the grid as they are a load when charging, source of short duration energy storage, source of essential services traditionally supplied by fossil fuel generation e.g. Kwinana battery 100MW / 200MWh
- SA Tesla powerwall virtual power plant (VPP)
- Are VPPs coming to Perth?



Conclusions



- Rooftop solar – worth investing in – if in doubt ask your local council + get three quotes - <https://www.solarquotes.com.au/>
- Energy poverty is a thing – there are programs on the go but need wider support – Bankwest Curtin Economics Centre report and talk to your local council
- Home batteries – join the early adopters, help decarbonisation, prices are dropping, good foundation for home electrification, subsidies would be useful, helps households become more aware of their energy use
- EVs – transformational technology
- Electrifying your house to displace fossil gas and save money is a very good idea (Rewiring Australia project Dr Saul Griffith)
- Get behind community efforts to decarbonise your suburb and the SWIS - build the culture, apply the science - change state policies
- PV Router - <https://www.paladinsolarcontroller.com.au/>



Questions - Slido 848205

1. How do I determine which solar panel system to buy?
2. Is it better to buy a home battery now or wait a year or two for prices to fall?
3. Are the standard solar or newer evacuated tubes better ? Pros/Cons of either. {Solar Hot Water}
4. Is it worth putting in a solar diverter to direct excess solar to hot water system ? {use surplus electricity generated by your solar power system to heat water}
5. Split solar hot water systems looks better - are they worth the price ? {Solar Hot Water}
6. What should I avoid when looking to buy a solar panel system/solar hot water system/home battery?



What can I do??

- Take individual action!!
- Talk to friends/neighbours
- Join us to assist in delivering meaningful action within our great community!

<https://www.facebook.com/EastFreoCARG>

