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# Upper Spencer Gulf Development in a ZERO Carbon World

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**ZEN**ENERGY

# World Heading to Net ZERO

- Paris global commitment to less than 2 degrees and close to 1.5.
- IPCC Urgency: earth now 1.2 degrees, Australia 1.4
- All other developed countries net zero by 2050.
- Global net zero central US and European strategic objective.
- China net zero by 2060 and serious (and must bring forward).
- Access to markets and capital depends on our joining the developed world.

# Australia Superpower of ZERO Carbon World

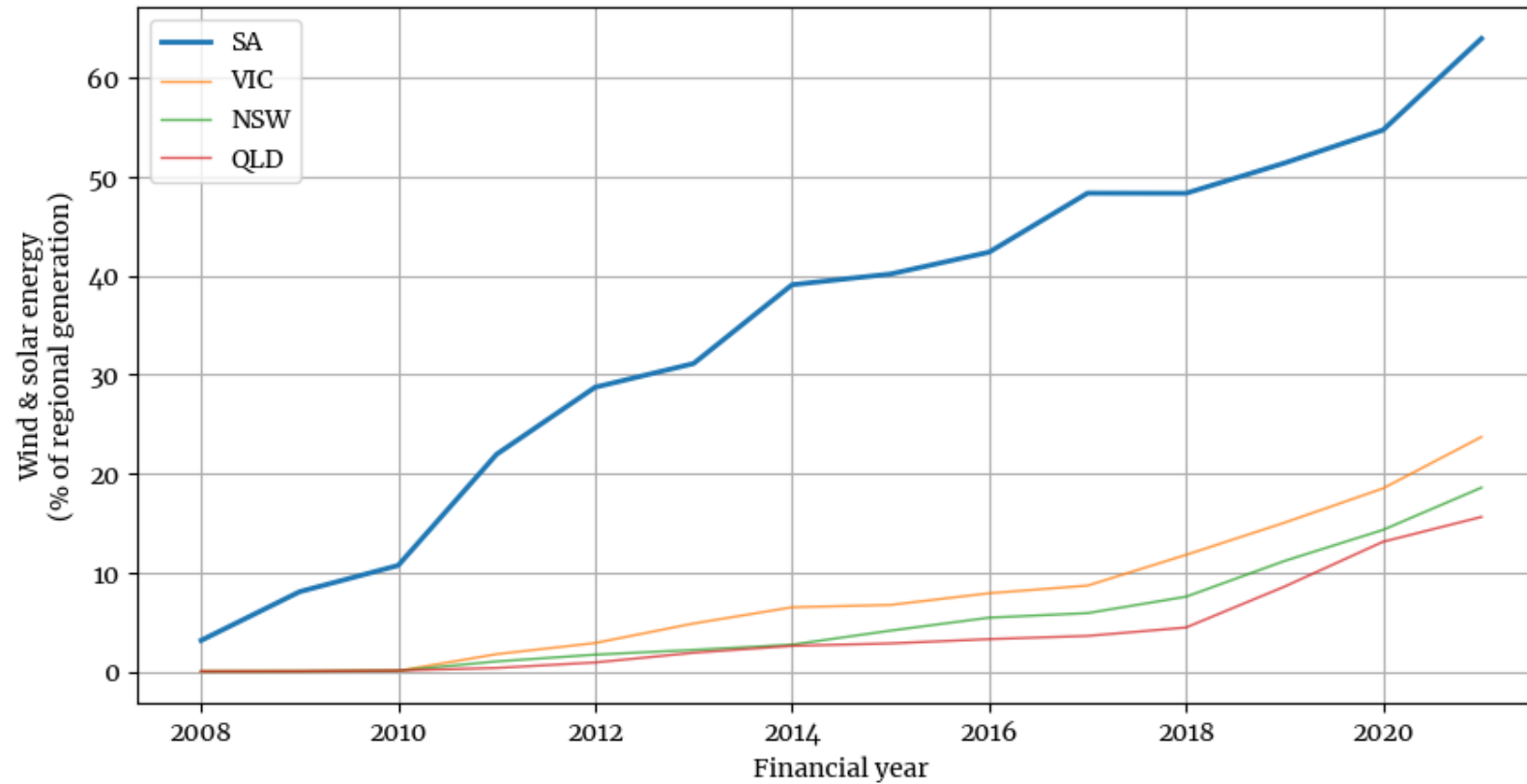
- Superior combinations wind and solar.
- Superior land carbon sequestration.
- Superior geology for carbon sequestration.
- Minerals for energy-intensive processing.
- Superior low-cost biomass for industry.
- Deep experience in related resource industries.

# SA Laggard to Leader

- Once worst coal and highest cost energy in NEM
- Now best renewables and lowest cost energy.
- Immense opportunities in minerals processing, new inputs for zero supply chains, geo-sequestration (Moomba), land and sea carbon storage, renewables-based hydrogen.
- Leader in the new technologies.
- Positive bipartisan political support.
- Strong leadership by SA-based business (e.g. SANTOS, ZEN, Nyrstar, GFG, OZ, BHP).

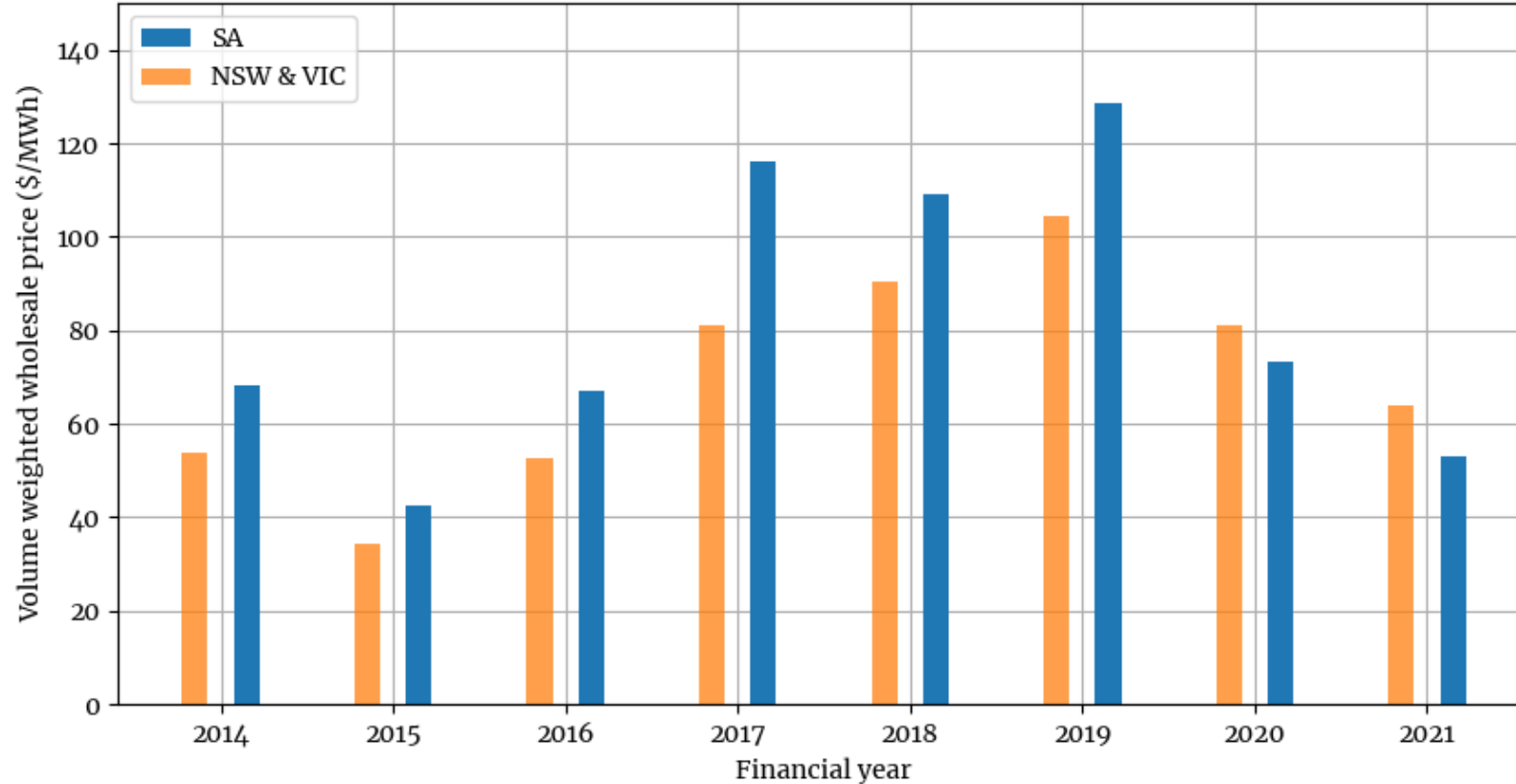
# Wind and solar generation

Figure 2: Wind and solar energy generation

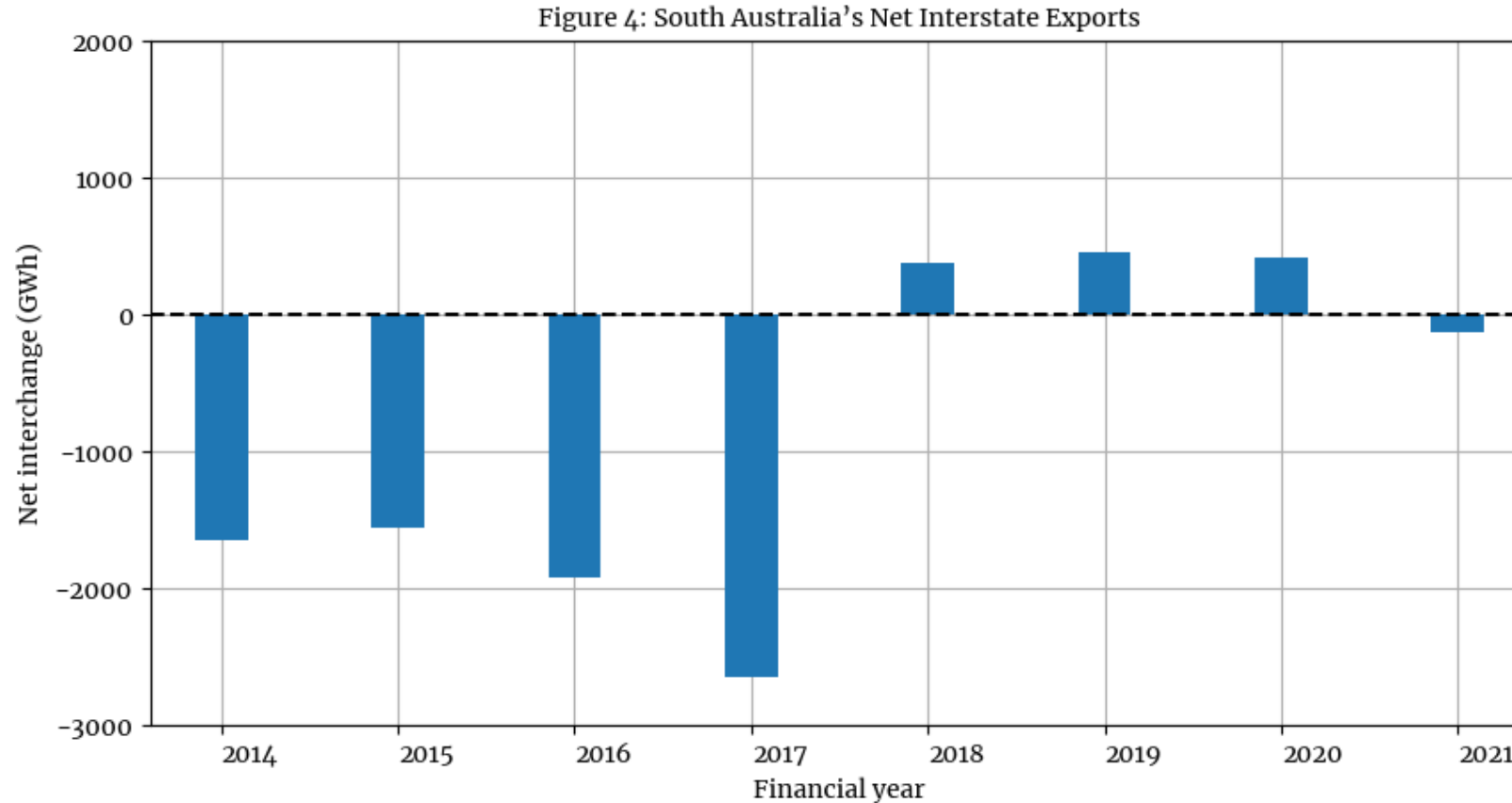


# Wholesale electricity prices

Figure 3: Wholesale electricity prices



# South Australia's Net Interstate Exports



# Upper Spencer Gulf as Superpower Triangle

- Infrastructure (power, water, gas, rail, road, port).
- Urban industrial traditions in Whyalla, Port Pirie, Port Augusta.
- Advanced industrial skills and training.
- Centre of solar, wind, pumped hydro storage, transmission system.
- Centre of minerals for processing (iron, copper, base metals, graphite, uranium, others).
- Centre of demand for zero emissions supply chains (ammonia explosives, ammonia fertiliser, hydrogen, oxygen, Evs, carbon credits).
- Rangelands and Gulf sea for producing carbon credits and biomass carbon industrial inputs.



# Upper Spencer Gulf Ready to Go

- Green iron now.
- Other minerals processing now.
- Ammonia derivatives now.
- Hydrogen and oxygen for industry now.
- Hydrogen for pipelines with green certificates now.
- Supported now by more renewables, transmission, pumped hydro storage, grid battery and storage investment.

# ZEN Energy Leadership in USG and SA Development

- ZEN first in SA household and community solar, small battery, design of big battery, feasibility of pumped hydro.
- ZEN long term contracts for retail power supply to SAG, CSIRO and SACOME Buyers' Group, and solar for Tonsley innovation precinct.
- Energy partner Sundrop farms working on expansion and diversification at Port Augusta.
- Longstanding work with Whyalla steel management on green energy solutions.
- Committed to early development of new SA large solar, pumped hydro, big battery to support existing contracts and new industry.
- Advanced work on SA and Australia's first commercial scale green hydrogen and green iron.