

Irrespective of the outcome of Australia’s forthcoming election, all Australians deserve to better understand issues in the energy debate. This includes developing an understanding of technical terms and what they mean together with energy pricing and financing models that are proposed by both Labor and the Coalition.

Issue 1: The Renewable Energy Target of 82% by 2030

Explanation: The Labor Party, commissioned RepuTex, an energy economics consultant in 2022, to model the impacts of its Powering Australia Plan. Key to this was Labor’s Rewiring the Nation policy – a \$20 billion fund to accelerate investment in electricity transmission projects. RepuTex predicted the 82% renewable target by 2030 would help Australia reach a 43 per cent by 2030 total carbon pledge [1].

Problems: The government failed to recognise that gas would need to play a critical role in firming renewables with reliable 24/7 ready power [2]. Green hydrogen projects have failed in Australia, projects such as Snowy Hydro and HumelLink are way over budget. Plus, huge environmental damage has occurred because of approval processes circumventing proper environmental and social evaluations [3].

Issue 2: Paris Agreement Net Zero Emissions by 2050

Explanation: The Paris Agreement is a **legally binding international treaty on climate change**. It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. Its goal is to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels” and pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels.” [4]

Problems: The USA pulled out of the Paris Agreement because it was too costly, ineffective, it wasn’t being addressed seriously in their view in many other countries that were lying about pollution and air quality, such as China) and pulling out would lower energy costs and aid the competitiveness of US industry [5]. Australia is caught in the same trap, where renewables have pushed up energy prices, lowered reliability, we have lost manufacturing to Asia and stand to lose the ability to attract significant growth in Data Centres and in AI [6].

Issue 3: The function of the Capacity Investment Scheme (CIS)

Explanation: This is a program to accelerate investment in new renewable energy generation, such as wind and solar, and clean dispatchable capacity, such as battery storage, to deliver 32 GW of capacity by 2030. It protects investors with a revenue safety net, guaranteeing returns [7].

Problems: The CIS fails to address actual output, as it only counts ‘Nameplate’ capacities of wind and solar farms. So, a wind farm on Bass Strait is measured in the same way as one

located in Oberon (West of the Blue Mountains). However, Bass Strait gets far more wind and will generate much more energy. This focus on Nameplate capacity is a fundamental flaw to the targeting used in the CIS, and the roll-out is a long way behind renewables targets [8].

Issue 4: CIS Revenue Sharing Model

Explanation: The CIS has a revenue sharing mechanism, where the government receive revenue for energy generation above a ceiling price, and the energy generator is compensated for any output below a floor price. In effect the total net revenue is underwritten, including: NEM spot and ancillary market participation, Any offtake contracts and other sources of off-market, All other revenue accrued by the Project Operator because of the project [9].

Problems: Energy generators may deliberately undertake projects in locations where electric output will be marginal, so they receive compensation from the government, on projects that don't stack-up without government hand-outs.

Issue 5: The Cost of Energy in the NEM

Explanation: Generators place offers to provide electricity, and it is compiled into a bid stack from all the suppliers. A dispatch price is determined every five minutes by the marginal generator. That means, the price in the market is based on the bid of the most expensive, dispatched generator [10].

Problems: The market is highly volatile, it is easy for generators to collude and potentially manipulate a market, it doesn't have separate pricing mechanisms for intermittent, baseload and dispatchable electricity. This has allowed renewable to force coal baseload power stations to curtail their output. This helps in reducing emissions, but it undercuts the viability of baseload providers and creates a less stable electricity grid [11].

Issue 6: Do we need baseload power anymore?

Explanation: There is an argument by renewables proponents that we no longer need baseload power. Instead, we can use renewables, with storage and gas backup, for firming of the electricity grid. This could work, but there are serious limitations, that Australia is now realizing.

Problems: We'd need to build overcapacity in generation, storage and transmission lines, to address intermittent and variable solar and wind electricity generation. Even with overcapacity wind droughts can occur, and there is a requirement for peaking gas plants, 14.8GW of them under the AEMO ISP Step Change Model. Hence it isn't a Net-Zero energy solution. Coupled with this wind turbines, solar panels and batteries have very low energy density compared to gas and nuclear energy, they take up massive areas and need to be replaced frequently, which undermines their viability and environmental sustainability [12].

Glossary:

Simplifying Issues in the Energy Debate – what they mean



Baseload power - refers to the minimum amount of electric power needed to be supplied to the electrical grid at any given time

Battery Capacity – is defined as the product of the electric current flowing in or out of the battery in amperes at a given voltage and for a given duration expressed in hours.

Behind the meter – refers to energy generation, storage and management on the consumer’s side of the utility meter.

Capacity Factor (CF) - refers to the proportion of an energy generating systems or units average load (or power output) to the system’s or unit’s nameplate capacity over a predetermined period of time.

Capacity Investment Scheme (CIS) - The Capacity Investment Scheme (CIS) is an Australian Government revenue underwriting scheme to accelerate investment in renewable energy generation (generation), such as wind and solar and clean dispatchable capacity (dispatchable), such as battery storage. It provides a long-term revenue safety net that decreases financial risk for investors. This ensures more renewable energy projects get built.

Curtailement - Curtailement is the deliberate restriction of power output from an electricity generator, often due to oversupply, low demand or grid constraints.

Dispatchable energy – refers to sources of electricity that can be programmed *on demand* at the request of power grid operators, according to market needs. Dispatchable generators may adjust their power output according to a request

Distribution - is the final stage in the delivery of electricity. Electricity is carried from the transmission system to individual consumers. Distribution substations connect to the poles and wires, that then connect to meters for each consumer.

Energy – can be stored, in motion or thermal and is measured for electricity in kW, MW and TW. It’s easy to picture for a dam, a volume of water x 10 gives its force and when multiplied by height gives its energy.

Firming – providing energy as needed to maintain the output from variable and intermittent power sources, such as wind or solar, for a committed period of time.

Intermittent renewable energy – is renewable energy that goes on and off, such as solar when the sun goes down, and wind when the breeze goes between maximum and still.

Nameplate Capacity – is the maximum possible output that an energy generator can produce, such as a wind turbine when it is running at maximum speed.

National Electricity Market (NEM) – The electricity grid that runs up the East coast of Australia, including Queensland, NSW, Victoria, South Australia and Tasmania.

Simplifying Issues in the Energy Debate – what they mean



Negative feed-in tariff – penalty that homeowners pay when they send excess energy, such as solar power generated during the day back to the electricity grid.

Net zero emissions – is emissions and removals of greenhouse gases due to human activities being in balance over a given period. It is often called simply net zero.

Peaking gas plant – power plants that only run during periods where there is a peak demand for electricity. They typically require a high output for short periods of time.

Positive feed-in tariffs – payment that homeowners receive from sending excess energy into the electricity grid.

Power – Is a measure of energy multiplied by time (in KWh, MWh and TWh), or the number of batteries in a row, or the volume of water for a pumped hydropower installation.

Spillage – refers to excess electricity that is generated in excess of demand that needs to be

Variable renewable energy – refers to renewable output that varies in magnitude typically due to changes in wind speed, or in solar radiation level.

Transmission - is the bulk movement of electrical energy from a generating site, such as a power plant, to an electrical substation. The interconnected lines that facilitate this movement form a *transmission network*

[1] <https://www.energycouncil.com.au/analysis/the-82-per-cent-national-renewable-energy-target-where-did-it-come-from-and-how-can-we-get-there/>

[2] <https://www.afr.com/politics/federal/dutton-proofed-greens-labor-deal-to-keep-gas-out-of-energy-scheme-20250212-p5lbev>

[3] <https://www.afr.com/policy/economy/target-on-track-but-the-truth-about-transition-costs-is-not-out-there-20241121-p5kskr>

[4] <https://unfccc.int/process-and-meetings/the-paris-agreement>

[5] <https://www.heritage.org/environment/commentary/4-reasons-trump-was-right-pull-out-the-paris-agreement>

[6] <https://www.innovationaus.com/ai-and-australias-missing-data-centre-strategy/>

[7] <https://www.dcceew.gov.au/sites/default/files/documents/reta-allocations-market-brief.pdf>

[8] <https://reneweconomy.com.au/five-ways-to-save-capacity-investment-scheme-from-attack-by-zombies/>

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[9] <https://www.dceew.gov.au/sites/default/files/documents/expanded-capacity-investment-scheme-design-paper-webinar-slides.pdf>

[10] <https://flowpower.com.au/the-nem-bid-stacks-and-five-minute-settlement/>

[11]

<https://usea.org/sites/default/files/Leveling%20the%20intermittency%20of%20renewables%20with%20coal%20-%20ccc268-1.pdf>

[12] <https://www.eait.uq.edu.au/files/46224/nuclear-energy-study-what-would-be-required.pdf>