Ruinables vs Renewables

Definition of Renewable Energy

The Encyclopaedia Britannica defines ***renewable energy*** *as, "usable energy derived from replenishable sources such as the Sun (solar energy), wind (wind power), rivers (hydroelectric power), hot springs (geothermal energy), tides (tidal power), and biomass (biofuels).*
[Renewable energy | Types, Advantages, & Facts | Britannica]

"**Renewable Energy (RE)**", in the Australian context, includes hydro electric generation, which largely distorts any understanding of the full impact of transitioning to a almost entirely national electricity system dominated by intermittent industrial scale wind and solar electricity generation that must also be supported by battery energy storage systems (BESS) and pumped hydro storage works, all connected by new transmission infrastructure.

"**Variable Renewable Energy (VRE)**" is sometimes used to describe just the wind and solar electricity generation component of Renewables and includes industrial large scale solar (e.g. greater than 10MW capacity) and small scale solar (e.g. residential rooftop solar) systems. There are significant differences between small and large scale solar systems to justify treating them independently (refer Appendix A).

Definition of Ruinables

To better understand the impacts of Australia's transition to a predominately industrial wind and solar driven electricity system we need a better term to describe industrial elements of the new system. That term is Ruinables

Save Our Surroundings (SOS) defines ***Ruinables*** *as, industrial large scale dispersed, intermittent, non-synchronous, non-dispatchable energy derived from not always available input sources such as the Sun (solar energy) and Wind (wind power) supported by intermittently available energy storage sources, such as Battery Energy Storage Systems and Pumped Hydro works, all connected by new Transmission Infrastructure to the existing grid.*

Why the term Ruinables?

Save Our Surroundings (SOS) has over many years researched, analysed and written hundreds of papers and submissions, as well as appearing as witnesses at Federal Joint Parliamentary hearings and presenting at numerous independent planning panels on specific Ruinables projects.

There are so many issues with the term Renewables because it is predominately the industrial wind and solar works, BESS, pumped hydro and associated new transmission infrastructure elements that create complexity in presenting the problems with these to people with little understanding of Australia's transition to a new but not better electricity network.

For instance, industrial wind and solar works, BESS, pumped hydro and new transmission infrastructure (Ruinables):

1. Ruin Australia's energy security as the supply of components are mainly sourced from China, the world's highest emitter of green house gasses.

2. Ruin Australia's national security due to the predominance of foreign sourced components and the foreign control and influence over our electricity networks.

3. Ruin the stability of the existing electricity grid due to its unpredictable variable output (availability, quality and stability of frequency and voltage).

4. Ruin the Australian economy by making the provision of energy increasingly more and more expensive, so causing higher costs for almost every endeavour leading to individual hardships, record business failures, reduced manufacturing and investments going overseas.

5. Ruin the principle of equity by imposing huge industrial developments and all their negative consequences on regional and rural Australians while city dwellers are exempted.

6. Ruin the fairness between small scale solar and large scale solar because the former has its capacity limited (e.g. a 6.6kW system restricted to 5kW export to the grid) and will soon be charged to supply to the grid, whereas industrial large scale generators get guaranteed revenue under the Capacity Investment Scheme and guaranteed minimum income per MW hour under the RET scheme.

7. Ruin the principle of inter-generational equity through ever increasing $billions in recurring subsidies that are largely financed from government debts that will have to be repaid by future generations.

8. Ruin the principle of government policy justification on the basis of rigorous cost-benefit analysis, which was not done so resulting in multi-billion dollar cost-blowouts (e.g. Snowy 2.0, Marinus Link), continually rising energy costs to consumers, grid instability, no measurable impact on climate, loss of jobs, etc.

9. Ruin evidenced-based decisions by ignoring the overseas experiences that every country that has incorporated more than 30% of wind and solar electricity capacity has resulted in significantly increased energy costs to consumers, reduced economic activity and increased the unreliability of energy delivery.

10. Ruin the concept of equivalence as Ruinables capacity is NOT equivalent to Coal, Gas and Nuclear power capacity by a factor of at least 1:10, when based on expected output (kilowatt hours) over, say 50 years using just economic lives and capacity factors.

11. Ruin the ability of rural communities to voice their objections by for example, in NSW, requiring 50 or more written unique objections to Ruinables proposals that consist of over 1000 pages or more and only 4 weeks on exhibition.

12. Ruin productive food producing land by covering large areas with industrial structures that replace primary industry benefits of feeding both Australians and overseas communities as well as providing export income.

13. Ruin productive food producing land by compulsorily acquiring land for transmission infrastructure, so reducing productivity of the land lost and often the remaining land.

14. Ruin, potentially, future use of agricultural land where toxic contamination from solar panels (e.g. large scale damage from hail, lightning, fires, storms, land fill disposal), from deterioration of wind turbine blades (release of nano-particles through abrasion or landfill disposal, lightning, fires, storms, oil leaks) has occurred.

15. Ruin the principle of social licence by ignoring typically 90 - 100 % of submissions from communities being objections to individual projects.

16. Ruin availability to local residents of essential services (e.g. trades, medical) during the up to three years construction period per project, each requiring hundreds of imported workers, and potentially overwhelming the local population several times over (e.g. population of historic town of Gulgong NSW is 2700, proposed multiple labour camps starting 4kms from town totalling 7000 or more imported workers plus 3000 relatives, during the expected cumulative peak construction period 2026-28).

17. Ruin the rural and regional life-styles of areas subjected to: firstly, years of construction activity impacting services, roads, travel, safety, noise, accommodation, rents and: secondly, loss of rural jobs, loss of amenity, loss of nature, loss of community and loss of health for decades.

18. Ruin years of a person developing their property only to have a massive industrial development only metres from their boundary.

19. Ruin the viability of existing local businesses that compete for workers by having to attract workers by higher wages and the provision of, or subsidised, accommodation.

20. Ruin the mental health of some affected people because of endless Ruinables proposals for nearly a decade already, invasion of their properties, loss of relationships, industrialisation of their environment, sleep deprivation from audible and infrasound, economic impacts, loss of leisure time, etc.

21. Ruin the desirability of tourists to visit rural areas which will be surrounded by thousands of square kilometres of Ruinables projects visible for tens of kilometres.

22. Ruin job opportunities for local youth as rural jobs are reduced and ongoing Ruinables on-site jobs are typically zero-less than ten, even for individual projects that occupy thousands to tens of thousands of hectares of land.

23. Ruin the ability of rural and regional fire services to protect local communities from fires and toxic smoke in and around industrial works.

24. Ruin wildlife habitats through land clearing and fencing off natural wildlife movements.

25. Ruin the lives of local wildlife, often threatened and endangered species, through the destruction of habitat and causing death during construction and operation.

26. Ruin family relationships and create social disharmony.

27. Ruin friendships and create conflict between neighbours because hosts get financial gain but neighbours are negatively affected in multiple ways (e.g. visual, noise, water run-off, pests, increased fire risks, reduced food production, higher insurance premiums, unable to insure for increased risks, reduced property values).

28. Ruin the lives of artisan miners in the Republic of Congo and the Uyghur in China who are used as slave labour to produce Ruinables components.

29. Ruin the rural, regional and ocean views of residents, visitors and tourists.

30. Ruin the character of rural and wilderness areas by covering thousands of square kilometres with industrial structures, some as high as 300m and 200m wide and which can be visible from over 70kms away.

31. Ruin any justification for subsidising old Ruinables technologies that were first used for generating electricity from a wind turbine to charge a battery (James Blyth in 1887) and commercial solar panels (Bell Laboratories in 1950s) and have been in use globally at scale for nearly 30 years.

32. Ruin any case for a transition to a Ruinables dominated energy system by ignoring or distorting facts, logic, physics, engineering, and actual experience that repeatedly show that the stated objectives are not and will not be achieved (that is: affordable electricity, reliable and secure supply, combating climate change through emissions reductions).

33. Ruin any case for a transition to a Ruinables dominated energy system by ignoring or distorting facts, logic, physics, engineering, and actual experience that repeatedly show that sun and wind droughts mean no electricity generated for consumers, including industrial batteries (BESS) and pumped hydro schemes. (refer Appendix B for examples).

Appendix A: Differences between small scale and large scale solar systems

Definition of Ruinables
Save Our Surroundings (SOS) defines ***Ruinables*** *as, industrial large scale dispersed, intermittent, non-synchronous, non-dispatchable energy derived from not always available input sources such as the Sun (solar energy) and Wind (wind power) supported by intermittently available energy storage sources, such as Battery Energy Storage Systems and Pumped Hydro works, all connected by new Transmission Infrastructure to the existing grid.*

There are significant differences between small scale (< 100kW capacity) and large scale (> 100kW capacity) solar systems to justify treating them independently.

Typically, significant Ruinables projects are 100,000kW (100MW) to 1,200,000kW (1,200MW or 1.2 gigawatts) in size. By comparison, small-scale solar systems range from about 5kW to 100kW and are typically installed on rooftops.

Because of these significant differences, as summarised in the table below, our definition of Ruinables excludes small scale solar.

Characteristic	**Small scale solar**	**Large scale solar**
Requires little or no land use	Yes	No
Does not reduce food growing capacity	Yes	No
Does not damage wildlife habitats	Yes	No
Does not remove or interfere with wildlife from area	Yes	No
Does not alter the local views or landscape character	Yes	No
Does not require excessive quantities of materials	Yes	No
Allows an individual to choose to have installed or not	Yes	No
Provides lowest cost electricity to the premises (1)	Yes	No
Does not depend on subsidies for economic viability (2)	Yes	No
System degradation with age is not a concern (3)	Yes	No
Reduces demand on the grid (4)	Yes	No
100kW maximum capacity to qualify for small scale technology certificates (STC)[subsidy]	Yes	No
100kW minimum capacity to qualify for large scale generation certificates (LSC), a subsidy of at least $40/MWh], competitive preferences, subsidised loans, guarantee revenue (CIS) (5)	No	Yes
Requires rehabilitation of land upon decommissioning	No	Yes

(1) Small scale solar systems do not incur the operating costs of large scale solar systems (e.g. land lease payments, community funds, VPAs, transmission losses, vegetation maintenance, road maintenance, wages) yet use similar technology (solar panels and inverters).

(2) Large scale solar systems require subsidies and protection from competition for both construction and operation of the system. Small scale systems will return the capital outlay, whether subsidised or not, by avoiding the use of expensive grid supplied electricity and by receiving a feed-in tariff where available.

(3) Solar panels and inverters continually lose efficiency with age, which reduces revenue for large-scale solar systems until operation becomes uneconomic. Small scale solar systems are less affected by system degradation as the system usually produces more electricity during sunny days then is consumed.

(4) Small scale solar (e.g. rooftop) consumes what is electricity generated or exports any excess to the grid if connected to it, whereas industrial solar, which usually incorporate a BESS, draw electricity from the grid for BESS cooling, equipment and facilities operation. Wind works also draw from the grid for operating turbines on windless days, and for BESS cooling, equipment and facilities operation.

(5) https://www.dcceew.gov.au/energy/renewable/capacity-investment-scheme

Appendix B: Examples of Sun and Wind droughts

*"The **National Electricity Market** (**NEM**) is a wholesale market through which generators and retailers trade electricity in Australia. It interconnects the six eastern and southern states and territories and delivers around 80% of all electricity consumption in Australia.*

Western Australia and the Northern Territory are not connected to the NEM. They have their own electricity systems and separate regulatory arrangements."
[https://www.dcceew.gov.au/energy/markets/national-electricity-market]

Example 1: June 2024

This example of posts on 5/6/2024 and on 8/4/2025 was sourced from John Moore's petition on change.org which he based on data from the AEMO dashboard at **https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/data-dashboard-nem**

"Unreliable Renewables CAN NEVER BE PART of the modern Australian Grid. This was shown clearly from the AEMO data dashboard, when for fourteen hours, batteries, solar and wind contributed 6% or much less to the Grid"

"From 4/6/24 4.50pm uninterrupted to 7.00am 5/6/24 (14 hrs) Solar – Wind and Batteries NEVER PRODUCED MORE THAN 6% OF NATIONAL GRID PRODUCTION REQUIREMENTS AND WAS EVEN DOWN TO 1%.

Eastern States 4th June 2024 4.50pm EST. Batteries 0%, Biomass 0%, Black Coal 46% Brown Coal 14%, Gas 21%, Hydro 15% Diesel 1% Solar 0%, Wind 1%. Batteries, Solar and Wind, only producing 1% of the input to the Grid.

14 hours later. Eastern States 5th June 2024 6.50am EST. Batteries 1%, Biomass 0%, Black Coal 51% Brown Coal 17%, Gas 13%, Hydro 12% Diesel 1% Solar 0%, Wind 5%. Batteries, Solar and Wind, only producing 6% of the input to the Grid.

At 11pm on the 4/6 by State. Electricity was produced by: NSW 88% Black Coal, QLD 91% Black Coal, VIC 81% Brown Coal, SA 92% Gas, TAS 95% Hydro.

The spot price in SA at 6.20pm, peaked at $3,936 per MWh."

Example 2: 24 May 2025

This example was a result of SOS analysing data provided by the NEM-Watch.Info Live Supply & Demand Widget on 23/05/2025 at two NEM times, 18:30 and 20:00, that is, evening peak demand time.

Table 1 is an extract of the generation sources by region. We draw attention to South Australia because as at April 2025 it already has about 80% installed capacity of wind 45.8%, large solar 20.5% and rooftop solar 13.7% and so is representative of the likely effect of a 82% renewables dominated NEM grid by 2030. SA has capacities of diesel 3% and gas 17%.

It also imports electricity from interstate. SA also has substantial battery storage capacity. Table 2 shows the demand by source and region.

Table 1: Generation (MW) by Source & Region

	GENERATION (MW) 18:30 (6:30pm)			GENERATION (MW) 20:00 (8pm)		
Source	**SA**	**Qld/NSW VIC/TAS**	**Total**	**SA**	**Qld/NSW/ VIC/TAS**	**Total**
Black Coal		11691	**11691**		11707	**11707**
Brown Coal		4314	**4314**		4357	**4357**
Gas	1098	2880	**3978**	1044	2471	**3515**
Hydro		4121	**4121**		3376	**3376**
Wind	340	1530	**1870**	350	2068	**2418**
Large Solar	0	1	**1**	0	1	**1**
Small Solar (rooftop)	66	14	**80**	0	0	**0**
Battery Storage	324	487	**811**	64	39	**103**
Other		17	**17**		17	**17**
Total	**1828**	**25055**	**26883**	**1458**	**24036**	**25494**

Table 2: Demand (MW) by Source & Region

	Demand (MW) 18:30			Demand (MW) 20:00		
Source	**SA**	**Qld/NSW/ VIC/TAS**	**Total**	**SA**	**Qld/NSW/ VIC/TAS**	**Total**
AEMO operational	1979	24803	**26782**	1953	23520	**25473**
Pumping Hydro			**0**			**0**
Battery Charging	2	21	**23**	1	18	**19**
Met by Rooftop solar	66	14	**80**	0	0	**0**
Total	**2047**	**24838**	**26885**	**1954**	**23538**	**25492**

Table 2 is an extract of the demand sources by region at the same points in time as the generation. Some points to note are that:

- At 18:30 peak demand SA was generating 60.1% from gas, 18.6% from wind, zero from large-scale solar, 3.6% from rooftop solar and 17.7% from battery storage.
- At 18:30 peak demand SA was only generating 89% of its required demand, the balance being imported from Victoria.
- At 20:00 SA was generating 71.6% from gas, 24% from wind, zero from large-scale solar and rooftop solar and battery storage has dropped to 4.4% after just 1.5 hours.
- At 20:00 SA was only generating 74.6% of its required demand, with gas running near maximum capacity and wind at only 13% of its nameplate capacity with the

balance of 25.4% being imported from Victoria.

- At 20:00 the total NEM was generating 45.9% black coal, 17.1% brown coal, 13.8% gas, 13.2% hydro, 9.5% wind, zero from large-scale solar and small solar and 0.4% battery storage and 0.1% other.

- Across the entire NEM grid wind, solar and batteries contributed less than 10% of the, not particularly high, required demand of 25,494 MW despite being more than 53% of the NEM capacity (AEMO December 2024*: Coal 24.1%, gas 13.8%, Hydro 9.1%).

Conclusion

It appears that South Australia is the "canary in the mine" and the examples 1 and 2 clearly demonstrate that, as many engineers, economists, consultants, analysts, commentators and others have stated, an electricity system dominated by wind and solar electricity generation, even with storage, cannot even meet SA's demand let alone the whole of Australia.

Sun and wind droughts are natural occurrences which can last for short or very long periods and occur simultaneously across the entire NEM grid, as occurred on 4/6/2024 and other occasions.

The inevitable consequence of a transition to a Ruinables-based energy system, which Australia is already experiencing, is an expensive, unreliable, unstable, high security risk energy system that is destroying environments and the economy for no measurable benefit.

* https://www.aemo.com.au/-/media/files/electricity/nem/national-electricity-market-fact-sheet.pdf