

From Jay redstaregg.com

## Red Sun Solves Transmission Line & Grid Infrastructural Obstacles & Economic hurdles by Repacing them with Pay As You Go 40MW mobile batteries

Without a massive grid upgrade, the Philippines US and Aussie Coalition's nuclear plan faces a high-voltage hurdle

<https://www.youtube.com/watch?v=dEUxEZ2sfUM>



Retrofitting a Molten Salt reactor on the deck of any ships can be implemented putting the RedStar's Red Sun Thermal Generator in the Engine Room connecting the MSR with the engine by a simple power cable, thereby the fuel cost could be zero. Lloyd's insurance is available with full financing package.

## Red Sun mobile battery Retrofits All diesel and turbine gensets, ships, trains and thermal power plants

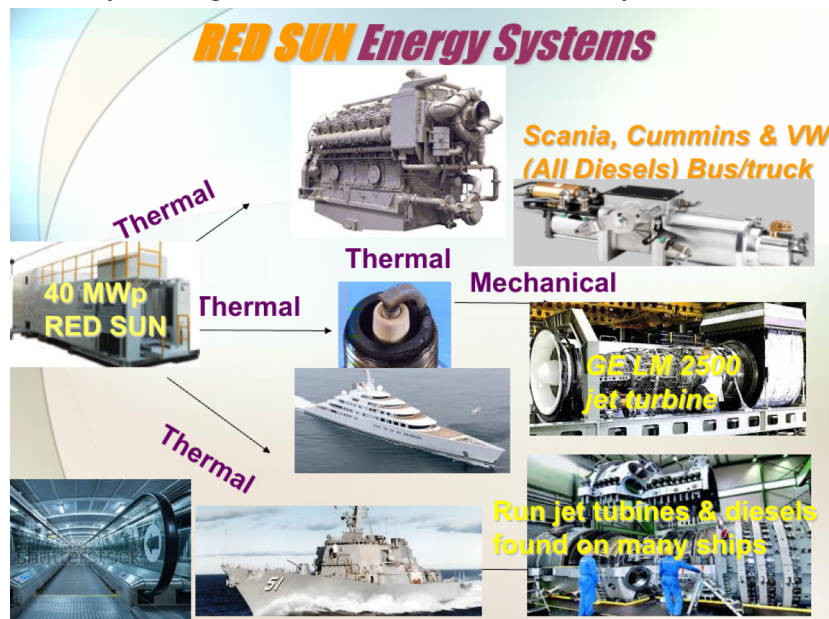
The truth is all countries need to build transmission lines and substations first or all future plants and renewable systems will be curtailed (California has 60% curtailment), but; these systems cost \$ trillions, which the government's will not pay for; and the Philippines certainly can't afford this scale of investment and time (10 years to construct). For example, in the US, they need \$2.5 trillion for 8,000 miles (and 600,000 circuit miles) and 70,000 substations by 2035. Of course, that will never happen, as the country is already underwater with nearly \$35 trillion in debt!



Red Sun runs the trains wirelessly saving 40% on building each mile (Bautista, 2024, DoT Sec'y), while running ships, trains or trucks at 12 c US/kWh vs 43 c US/kWh now for diesel

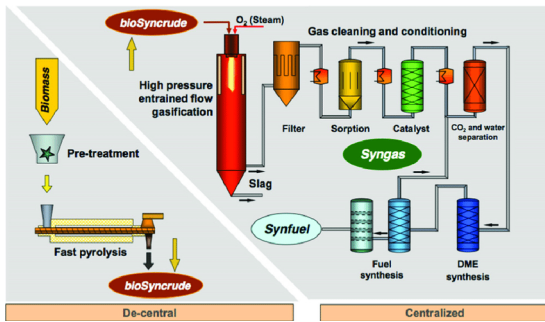
<https://www.philstar.com/business/2024/07/08/2368465/dotrs-2025-budget-p20-billion-short-target>

Australia needs 4000 miles and 35,000 substations for their 7 planned nuclear plants. They would have to raise \$1.25 trillion USD, which is unlikely. So, we are officially arising at the crisis in the next few years.



Enter Red Sun Mobile 40 MW - 300 MW/charge (6 hours to charge) thermal batteries that move city-sized power blocks wirelessly by truck, ship or train. A self-subsidizing, pay as you go last 100 mile solution to move power directly to customers from all RE and powerplants- delivering electricity and unavailable 1000°C industrial heat and steam to the industrial client or city substations across town or across the state and over both land and sea. Moreover; Red Sun runs the very large ships, trains or trucks that deliver these 30 ton molten nickel alloy batteries at 3 to 7.7 US cents per kWh cost- the very same transmission line costs now; yet, Red Sun's end- to- end self- contained power plant in a shipping container can include genset does not require breaking the bank and setting back the calendar 10 years to accomplish!

Red Sun, modelled after the Earth Sun system can be charged by Redstar's new catalysed biomass pyrolysis, nuclear, wind, hydro solar, geothermal and three separate hydrogen charging systems- all green- all affordable - and all safe and effective. Or, can charge at wind, hydro or geothermal at night and deliver in the day with the only affordable and mobile energy arbitrage system, costing 1/10th the cost of lithium ion or sodium batteries per kWh, but lasting 50 years and millions of cycles like the Earth!



**Redstar's proprietary Catalyzed Pyrolysis charges batteries overnight at 7.7 US cents/kWh**

The perfect solution for home, industry and capable of powering cities and small island communities just as easily! Otherwise, an underwater cable starts at \$90 million USD! That's not going to happen. Neither is the 3360% increase in electricity needed in the US to match the administrations stated goals (see below article) without Red Sun. The Philippines has even less money and an even bigger infrastructural electrical grid problem with 7000 islands and only 22% RE so far! The waiting time for a single grid connection is 2 years with the grid operator NGCP! there is only one real solution for both ( highly indebted countries) these countries, that need to grow their power and electrical infrastructure- Red Sun

**How Biden's EV invasion could hit a roadblock by 2035. (Jul 2024).**



The Biden administration's EV invasion by 2035 could hit a roadblock with America's already stressed power grid, experts have warned.

That is because America's electrical network has not been updated in over 25 years, and is in need for more transmission lines to power millions of new green energy-powered vehicles - all of which could cost more than \$2.5 trillion.

The demand for power will account for about one-third of electricity growth within the next decade as Princeton University projected the nation will use up 3,360 percent more electricity to meet the presidents goal.

'In our projections, EVs cause electricity demand in the transportation sector to grow between five-fold and 10-fold by 2035,' an EIA spokesperson told DailyMail.com.



EV demand will account for about one-third of electricity growth within the next decade but the grid currently doesn't have the infrastructure to handle the increase

There were roughly 2.4 million registered EVs in the US at the end of last year, which isn't enough to [overwhelm the electrical grid](#) yet but could cause major problems in the future if the infrastructure isn't updated, experts warn.

The International Energy Agency's Global EV Outlook [predicted](#) that EV sales could reach 17 million in 2024 and projects that electric vehicles will likely account for half of all cars sold by 2035.

IEEE Spectrum, a publication of the Institute of Electrical and Electronics Engineers, published a report on EV transition, published a study in 2023 that found that 8,000 power-generation units and 600,000 circuit miles of AC transmission lines will need to be replaced or improved by 2035.

In addition to 70,000 substations to support increased renewable energy and battery storage - bringing the cost to more than \$2.5 trillion.

The average American drives their car about 13,500 miles per year, meaning the standard EV will typically require about 3,857 kWhs of electricity annually, according to the US Department of Transportation (DoT).

A kilowatt-hour (kWh) is a unit of energy that measures how much electricity is used and is equivalent to a 100-watt light bulb used for 10 hours

The [demand for electricity](#) in the transportation sector would likely increase from about 21 kWhs last year to between 123 billion and 211 billion kWhs in the next 11 years, according to the US Department of Energy's Energy Information Administration (EIA).

'Right now, our infrastructure is likely 'Ok' for the slow trickle of EV adoption,' Robby DeGraff, the manager of Product and Consumer Insights at AutoPacific told DailyMail.com.

But the drastic increase in electricity use means 'the grid will certainly need to be revamped,' he added.

Electricity demand in states like Georgia has surged to record highs, ranking it among the top 10 states for total energy consumption.

In 2022, Georgia Power [projected](#) the state would see an energy demand growth of 400 megawatts for all electrical needs between 2023 and 2030, but it revised its estimates for the next seven years, stating it will see a growth of 6,600 megawatts - 17 times more than its previous forecast.

The Arizona Public Service has also projected it will max out its transmission capacity before the end of the decade.

A 2023 [study](#) by the [California](#) Public Utilities Commission revealed that the state will need to spend \$50 billion by 2035 in [electric grid](#) updates to [meet its EV targets](#).

Last year, the total electricity demand in the US was 3,800 billion kWh but that number is expected to grow to between 4,200 and 4,300 by 2035, with EVs accounting for about one-third of the total growth, the EIA reported.

Some estimates have suggested that the grid will need an additional 15 billion to 27 billion kWh to power EVs by 2050, Albert Gore, the executive director of the marketing technology company ZETA told [Government Technology](#)

Albert is the son of the former vice president Al Gore, whose longtime work in climate change activism earned him the Nobel Peace Prize in 2007.

The EIA spokesperson said the agency doesn't see any current problems with expanding the grid to meet the upcoming electricity needs but did acknowledge that it doesn't have the tools to create a model for how many improvements will be needed for localized distribution grids.



'I think the bigger and more pressing concern is all of the US's existing outdated grid infrastructure in many corners of the country that currently cannot even handle a summer surge in heat, inclement weather, or a cold snap,' DeGraff warned.

'That's the more critical issue. Look at what happened in Texas.'

The rapidly [rising electricity demand](#) in Texas resulted in 4.5 million customers losing electricity for several days during an intense cold snap in 2021.

The blackout has become known as the worst in Texas' history and resulted in the deaths of 246 people spread across 77 counties - 65 percent of which were related to extreme-cold exposure including hypothermia.

The Federal Energy Regulation Commission (FERC) said it is taking steps to update the infrastructure and claimed it will be equipped to deal with the growing number of people investing in EVs

The Environmental Protection Agency (EPA) told DailyMail.com that the rise in EVs won't impact the electric grid, claiming it will only 'increase generation from the electric power sector by approximately one percent in 2030, nine percent in 2040, and 12 percent in 2050.'

The agency added that the electrical grid has sustained all updated technology, such as using more residential and commercial air conditioning in the 1970s through the 1990s, saying that it shows 'our energy system is up to the task of meeting additional demand.'

The Federal Energy Regulation Commission (FERC) said it is taking steps to update the infrastructure and claimed it will be equipped to deal with the growing number of people investing in EVs.

The spokesperson added that it includes directing applicants to 'develop engagement plans for outreach to environmental justice communities and Tribes' who would be impacted by the construction, operation and infrastructure maintenance.

The engagement plans would also allow them to 'engage with landowners' when requesting a permit to build a transmission line on their property.

But obtaining permits to build generation, transmission and storage projects and then connecting them to the grid isn't a quick and straightforward process.

According to FERC, there was a queue of more than 2,000 projects waiting to be connected with an average wait time of about five years.

'While EVs will likely never 100 percent replace all gas vehicles on the road anytime soon, the market share is growing year after year, as is demand,' DeGraff said.

'So it'd be wise to begin the necessary preparations to safeguard the grid now.'

**Without a massive grid upgrade, the Coalition's nuclear plan faces a high-voltage hurdle**

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[Asma Aziz, Edith Cowan University](#)

Keeping the lights on in Australia is a complex task. Enough capacity must be ensured everywhere in the country, at every moment. Surplus in one location won't solve shortages in another, unless we have the transmission infrastructure to transmit electricity between them.

The transmission network largely consists of high-voltage lines and towers, as well as transformers which transfer electrical energy from one circuit to another.

Australia's transmission network is one of the oldest and longest in the world. As coal stations close and more renewable energy is built, the task of upgrading the system becomes even more pressing. So formidable is the challenge, it's one of the biggest roadblocks Australia faces in reaching its crucial goal of net-zero emissions by 2050.

The Coalition's plan for seven nuclear energy plants in Australia further complicates the task. A clear policy direction for Australia's electricity system is urgently needed.



The Coalition's nuclear plan complicates Australia's energy transition. Lukas Coch

Lots of work to do



In technical terms, transmission congestion occurs when an element on the network, such as a high-voltage power line or transformer, reaches capacity and cannot carry more electricity.

Think of it as like traffic in a city. During rush hour, bottlenecks occur when there are more vehicles than the roads can handle. During times of peak electricity demand, electricity lines and transformers can also reach their limits. Exceeding the limits of the network can damage equipment and lead to power outages.

Between now and 2050, Australia's electricity consumption will surge. We'll need to draw power from increasingly diverse and far-flung sources. Coal power plants, typically located near large population centres, will close. Energy generation from solar and wind farms, usually located in regional and remote areas, will increase.

Importantly, we must make the distinction between electricity capacity and whether that electricity is "dispatchable", or can be released on demand. That's one reason why we need new transmission lines – to move electricity around the system as needed. The sooner we can build this capability, the quicker and cheaper our energy transition will be.

So far this decade, 490 kilometres of new transmission lines have reportedly been added to the National Electricity Market, which serves the east coast and South Australia. A further 2,090 km of transmission lines are progressing from the planning phase to the construction phase.

There's still a lot of work to do: around 10,000 km of new transmission lines is needed by 2050. Western Australia's main electricity network also needs more than 4,000 km of new high-capacity transmission lines.



Australia needs 10,000 km of new transmission lines. Con Chronis/AAP

A looming problem

The network's ability to carry electricity is influenced by several factors. They include weather conditions, patterns of electricity generation and demand, the capacity of individual elements such as transmission lines and transformers, and their reliability.

Congested transmission can cause fluctuations in power prices. If cheaper electricity cannot be transported to where it's needed, more expensive generators are dispatched to meet demand. This increases the price of electricity for both energy retailers and consumers. It can also lead to higher prices in some areas than others and poses financial risks for energy providers.

Transmission congestion in Australia is a looming problem. For example, South Australian transmission company ElectraNet forecasts rising congestion on that state's network due to planned expansions of electricity generators, peaking in the late 2020s and 2030s.

What's more, planning studies have identified ageing assets in Queensland's transmission network, requiring new routes to manage constraints and ensure reliable supply.



Power prices can fluctuate if electricity transmission networks are congested. Jono Searle/AAP

Where does nuclear fit in?

All this has implications for the Coalition's nuclear plan, if it comes to fruition.

The CSIRO and others say a nuclear power plant of any size would not be operational in Australia until after 2040.

If transmission lines are congested at that future point, nuclear power plants may not be able to send all their electricity to the grid.

Nuclear plants are expensive to build and run. But they typically generate electricity continuously, helping to offset these costs. If the plants can't feed into the grid, or can't sell their electricity at competitive prices, they may lose revenue and struggle to cover their costs, affecting their long-term viability.

The continuous high output of nuclear plants also helps them run efficiently. Frequently adjusting energy output leads to more wear, lower efficiency and reduced energy production over time.

Constraining nuclear output can have broader repercussions, too. In France, for instance, nuclear output is at a 30-year low, forcing the country to import electricity and prepare for potential blackouts. The reactors are offline for maintenance, not due to transmission issues. But the example highlights the consequences when nuclear energy is taken out of the mix for any reason.

Clarity is needed

Finally, the increasing share of renewable energy in our electricity grid means there's no guarantee transmission capacity will be available for nuclear energy.

As South Australia's energy minister Tom Koutsantonis noted on X, this poses challenges for the Coalition's plan to build a nuclear plant at the site of an old coal station at Port Augusta and use existing transmission infrastructure:

The myth that a nuclear reactor could just plug into the old Pt Augusta coal power station transmission lines is not true. The transmission lines are already nearly full from new renewables. In truth, a nuclear reactor at Pt Augusta would need new transmission lines, the exact thing the LNP are complaining about.

So what's the upshot of all this? Transmission infrastructure is a thorny policy problem, and divergent views among policymakers about energy policy only add to the challenges.

A clear direction on the future of Australia's electricity grid, including transmission infrastructure, is essential. Without it, the energy transition will be slower and more expensive.

\* [Nuclear energy](#)

- [Transmission lines](#)
- [Energy transition](#)
- [Coalition nuclear](#)