



CLIMATE ENERGY FINANCE

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Rooftop solar and batteries are key to improving First Nations self-sufficiency and permanently cutting dependency on imported diesel

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The US war on Iran at the start of 2026 gave Australia a major reminder of why energy security is yet another reason for the whole of our country to embrace the energy system transformation to electrification and decarbonisation – a permanent solution to our addiction to expensive, high emissions, scarce diesel and oil imported from the Middle East.

Nowhere is this need and opportunity more evident than in remote communities of outback Australia. For these communities, excessive dependency on imported diesel means energy insecurity is a near daily threat.

Across the top of Australia, hundreds of communities, primarily Indigenous, remain entirely dependent on imported diesel-powered generators for electricity. For regional and remote Indigenous communities, these diesel systems consume around [25 million litres of diesel each year](#) in the Northern Territory alone. Data on the number of these communities is hard to track, fragmented across the states and territories. But a look at the numbers suggests that between 200 to 300 remote communities between WA, QLD, SA and the NT depend entirely on costly, fragile, diesel imports.

In Queensland alone, the state's Community Service Obligation costs under the Regional Electricity Subsidies (Uniform Tariff Policy) have reached [\\$604m annually in FY2026](#), up from \$537m two years earlier in FY2024. [Western Australia](#) operates a nearly identical framework known as the Uniform Tariff Policy (UTP), which costs [Horizon Power](#) (Regional & Remote WA) \$240-270m, and Synergy (covering the South West Interconnected System) at a system cost of \$671m annually.

In February of 2024, [Renew Economy reported](#) that the Northern Territory government launched community consultations on its Remote Power System Strategy (RPSS), aimed at building renewable energy capacity in remote indigenous communities, targeting an average of 70% penetration by 2030. The program targeted the territory's 72 communities serviced by Indigenous Essential Services (IES), with initial consultations expected to involve Land Councils, Regional Government Councils, Local Aboriginal Corporations, and other relevant

stakeholders. Following the [renewable energy target rollback](#) in the NT in March of 2025, which saw the state scrap the 50% renewable energy target by 2030, we have seen no material progress on this critical community program.

Rooftop solar and batteries and virtual power plant technology solutions could permanently reduce this massive state budget subsidy, but it requires capacity building and up front capital, as well as political will and policy developments, and ultimately a nationally coordinated approach. Australia has installed over [487,000 home battery systems](#) in the last 12 months. But how many have been installed in remote, end-of-grid and off-grid communities? Next to none. Now is a great time to change this Minister Chris Bowen and Assistant Minister Josh Wilson, Minister Amber Jade Sanderson and Minister David Janetzki.

Would not this latest fossil fuel war in the Middle East be a great reason to undertake reforms to permanently cut our exposure to imported diesel, starting with those most vulnerable in remote communities across Australia? This would deliver significant ongoing budget savings by permanently reducing the ongoing increase in the Community Service Obligation, as well as providing greater energy system reliability, with decarbonisation an added bonus.

Renewable-based microgrids offer communities more than energy reliability and the passive benefits that are generated associated with increased reliability. Energy developed with/by community is an enabler of the solutions to many social, cultural and economic challenges that plague Indigenous communities across the nation. This development model, shown below, not only minimises harm or mitigates downside risks, but offers communities a physical foundation to pursue and attain upside or benefits in a far more active way. Health, education, employment, homeownership, income, economic development, community cohesion, language, culture, self-determination and a range of other community outcomes can all be improved via an energy system developed with the intention of being the means to these higher level community ends.

The opportunity draws attention given the global instability of energy and our ability to permanently reduce downside risk.

In the last decade state governments have begun to bring some of these communities on the journey to green resilience. But the journey is half-hearted and disjointed at best, largely ignoring the massive improvements in technologies such as rooftop solar and behind-the-meter batteries. The Federal government has commendably stood up ARENA's Microgrid Fund Program - First Nations Community Microgrids (Stream B), which offered a total of \$75m to communities around Australia to develop microgrids, and the \$50.4m Remote and Regional Community Reliability Fund (RRCRF) from the Department of Environment, which was allocated to different interests developing feasibility studies for renewable energy projects. Unfortunately, the total amounts assigned to these programs and the massive lag in deployment means this is not enough to catalyse the systems change needed, and insufficient to make a material difference across the nation. Furthermore, these programs were administered on a first-come-first-served basis, with no real strategic driver to maximise the impact or learnings gained, and reinforcing the disjointed approach being taken to remote community energy. We need State-Federal cooperation and collaboration.

In this oped we examine the situation in three remote First Nations communities at Lockhart River (Cape York in FNQ), Maningrida (500km east of Darwin in the Northern Territory (NT)) and Yarrabah (near Cairns, Qld), to understand the profile of historic efforts and the scope for a massive step up in electrification, decarbonisation and energy independence that could be unlocked with a relatively modest investment in upfront capital systems and capacity building.

Lockhart River

In 2017, the Queensland Government trialed a [project pilot at Lockhart River](#), a remote Cape York community that, until then, ran entirely on imported diesel. Delivered by a consortium comprising Ergon Energy, Australian Sustainable Energy and Indigenous Energy Australia, the project added 209kW of rooftop solar and a 60kWh battery sized specifically for "cloud smoothing": evening out short dips in solar output rather than displacing diesel generation more broadly.

Like much of remote Queensland, Lockhart River's power is supported by the \$604m a year in subsidies in the Queensland state budget. The project, which was projected in year one to generate ~341MWh, create \$90,000 in savings, and reduce emissions by 365 tonnes, was first designed as a pilot to see if solar could reduce the state's subsidy costs. Nearly ten years later, and the project has not been formally evaluated.

Still, solar now covers about 10% of Lockhart River's energy needs, and diesel use is down 8% — roughly 62,000 litres a year. That 10% figure was the deliberate design target from the outset. Without further investment in batteries, renewables hit a ceiling when complementing diesel networks, as old diesel generators need to stay above a minimum safe load to keep the grid's voltage and frequency stable. It would be entirely feasible to dramatically expand the rooftop solar system, add behind-the-meter batteries and upgrade the VPP to move the diesel gensets to a backup role to allow a permanent reduction in imported diesel, thereby permanently cutting the state subsidy and greenhouse emissions, whilst simultaneously improving system reliability to mitigate the high cost of regular power outages.

Maningrida

Reliance on scarce, expensive imported diesel is the same problem facing the people of Maningrida, about 500km east of Darwin. Disconnected from the main grid, they rely on a local diesel power station that can burn up to 10,000 litres a day. For roughly four months every year, when Cahill's Crossing becomes impassable in the wet season, that diesel gets delivered by barge from Darwin.

So long as the diesel arrives, the system tends to stay on. Outages are rare, and when the generator does trip, it's back within about 15 minutes.

The problem here is affordability.

Every day, individual households in Maningrida are without power, says Dhukurrdji Development Corporation (DDC) Chairman Reggie Wuridjal: “Every day I'm telling you. When payday comes, we might be a week off. We'll see that with no power. People end up with no power at their houses for days.”

A three bedroom may support 15 or 20 people, says Wuridjal, with only two or three rent payers connected to Centrelink. Cheaply built community housing, combined with reliance on inefficient box air conditioners, drives up electricity consumption, and come wet season demand soars. Power bills range from \$8 to \$30/day for a three-bedroom dwelling — up to \$10,000/year — a bill beyond the reach of much of the community. No wonder that the pay-as-you-go system means that families run out of credit in the weeks between paydays, going without power for days at a time.

The consequences ripple out from there, says Wuridjal: “At this time of year where it's dry season, at night time it chills down quite a bit too. You'll have people who don't have power to do proper cooking. And so when the mozzies are bad, they have to go outside to cook, where they light fires. And a lot of people end up quite sick from all the mozzies and the smoke.”

“You'll get a big number from heart disease in the hospital. They'll tell you what's happening in the community.”

But it's not just health that is affected. Wuridjal says that the stress caused by power outages breeds frustration in the community: bad sleep, absenteeism, family conflict, and police intervention are all linked to this basic infrastructure failure.

In a community survey conducted by Indigenous Energy Australia, 100% of respondents named power supply as a top daily concern in Maningrida; seven in eight linked it directly to food security, health, housing, and education. It's a testimony that energy instability isn't an inconvenience; it's a root cause constraint on everything else.

DDC CEO Adam Longbottom fears the situation will soon get worse, with energy insecurity moving from individual houses to the whole grid when a significant building development comes online next year. “[NT Power and Water] already told us that they're out between 80 [and] 100% capacity... potentially up to 120%,” says Longbottom.

But next year will see demand grow massively. “There's a new police station, a compound with about 15 dwellings on it, as well as a courthouse. It's got its own fuel station. It's a huge compound.”

That development would push the diesel power station into unstable territory, but NT Power and Water have told the Maningrida community they have no upgrade plans for at least five years. “They have no plans in the works whatsoever. I don't think they've got any idea what they're doing yet.”

Like Lockhart River, Maningrida does carry some solar, but until batteries arrive solar use is at a ceiling of 15%. Diesel generators have to stay above a minimum load to hold voltage/frequency stable: push too much solar in, and the diesel would drop below that safe floor.

The solution is known and already proven. At Daly River in 2017, ARENA and the NT government installed a 1MW solar array (3,200 panels) plus a 2MWh lithium-ion battery, with the result that Daly River has since been running at 47–50% renewable for years. Similarly, the community at Titjikala received support in 2019 to add a battery energy storage system (BESS) on top of their existing arrays, and their renewable share roughly tripled, from ~15% to as high as 53%, letting diesel generators idle for backup capacity instead of running continuously.

In its 2019 Lessons Learned and Performance Report, NT Power and Water wrote: “The Daly River project has met all objectives and has proven BESS technology can operate reliably in remote locations. In the Northern Territory future 'least-cost' power systems are likely to be based on BESS technology.”

And yet, as we enter late 2026, the people of Maningrida have no idea if and when similar upgrades will reach them. Until they do, energy insecurity will continue to plague the community at Maningrida, and as fuel prices continue to climb, the Northern Territory government will continue to pay for it.

Yarrabah

Head to Yarrabah, just outside of Cairns, and the problem is not a fragile independent diesel-powered grid but a fragile fringe-of-grid. A single overhead line running back to Cairns powers the community, and it regularly fails in storm season: recording 41 unplanned outages between 2018 and 2020 alone. Like Maningrida, temperatures here get dangerous, and the housing stock is poorly designed for the heat. Blackouts always hit when the community needs energy most.

Even when the power does work, the community is still worse off than people over the hill in Cairns. Thanks to Queensland's Uniform Tariff Policy, Yarrabah pays the same per-unit tariff as Cairns, but much higher consumption leads to significantly higher bills. Crowded, poorly insulated housing forces heavier air conditioning and refrigeration to keep pace with the tropical climate, leading to a consumption level 2.7 times the regional Queensland average.

IEA's Troyson Bassani, raised in Yarrabah, says Yarrabah experiences multiple blackouts a quarter.

“There are a disproportionate number of blackouts during the wet season. And that's largely due to Yarrie being on the end of a grid, fed by overhanging power lines that run through rainforest.”

Those outages, he says, cause significant damage to white goods, and to the items protected by them. “Yarrabah is not home to a legitimate supermarket, so when power does go out for four or eight hours, a week's worth of shopping is lost.”

“When you have households living in poverty, a week's groceries really impacts the hip pocket. All of that has to be thrown out.”

Meanwhile, the loss of air conditioning during the wet season brings tension to the community. “You couple that with 40 degree heat in an overcrowded house with no aircon — there's a direct correlation between that and domestic violence. When people are hot and bothered, they tend to take it out on the family, and social issues spiral from there.”

“A lot of kids are turfed onto the streets. And I'm talking about young kids as well. That affects then the next day, truancy, school attendance, like all of that, which has a sort of flow-on effect. And they are potentially exposed to drugs and alcohol-fuelled incidents.”

The solution, again, would be a solar-and-battery microgrid that decreases reliance on the fragile line to Cairns while significantly decreasing emissions. A correctly sized microgrid, says Indigenous Energy Australia CEO Michael Frangos, would give Yarrabah islanding capability, meaning the community could keep power running independently during an outage on the single 90km line, rather than losing supply entirely. IEA research suggests that installing rooftop solar and battery storage across Yarrabah's social housing could save households \$480 a year in energy costs. Notwithstanding the ongoing \$604m pa in Queensland, state financial support to remote communities like Yarrabah, the current arrangement makes for a recurring, ever-growing government liability with no end date.

The Solution

A one-off microgrid investment, by contrast, would convert that into a fixed capital cost that shrinks the annual bill going forward whilst delivering massive health and welfare benefits to the community. A well structured program could also concurrently provide skills development for First Nations people to ensure on-country service support and underpin a progressive system rollout across the whole of Northern Australia.