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Prepared for:	Joint Select Committee on Northern Australia
Purpose:	Submission to an inquiry into energy, food and water security
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Context and extent of energy insecurity in Northern Australia and the impact this has on communities, particularly remote communities

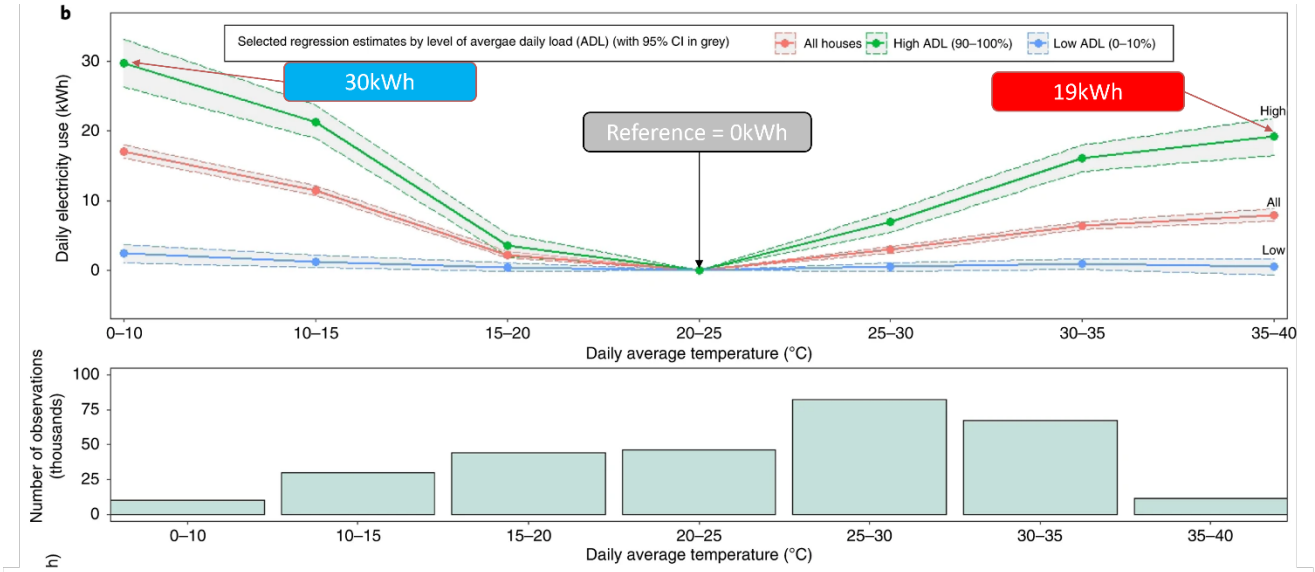
In Australia, prepayment for electricity predominantly operates in remote Indigenous communities – and when credit runs out energy is no longer supplied. These disconnections are not associated with grid stability, blackouts, or outages. Frequent disconnections occur because of a pre-paid system for payment that prevents the accumulation of large debts but does so at a potentially huge cost to households. Unlike how post-payment works, there isn't a bill reminder, and you can't arrange for a payment plan. De-energisation occurs almost as soon as credit runs out. While people will 'self-disconnect' for various reasons, de-energisation events can be dangerous.

Using data for 3,300 Northern Territory households we found that nearly all households (91%) experienced a disconnection from electricity during the 2018–2019 financial year. Almost three quarters of households (74%) were disconnected more than ten times. Households with high electricity use located in the central climate zones had a one in three chance of a same-day disconnection on very hot or very cold days [i]. In the dry grassland climate zone, greater electricity use during hot and cold (Figure 1) meant that heightened temperature-related disconnections were associated with both cooling and heating (Figure 2).

In Longden et al. (2022) we noted that: *the Essential Service Commission (for Victoria) observes that "customers who are disconnected from electricity or gas can face significant risks to their welfare… disconnection for non-payment reasons should only ever be a last resort"*. Australia's National Energy Retail Rules require that the retailer not arrange for the de-energization of premises having life support equipment or during an extreme weather event, but this is not comprehensively applied in remote NT communities. (Page 51-52: https://rdcu.be/dsSRX)

Source: https://humanrights.gov.au/our-work/aboriginal-and-torres-strait-islander-social-justice/publications/close-gap-2022 using https://rdcu.be/dsSRX

Figure 1: Daily use of electricity in central climate zone by daily load and temperature



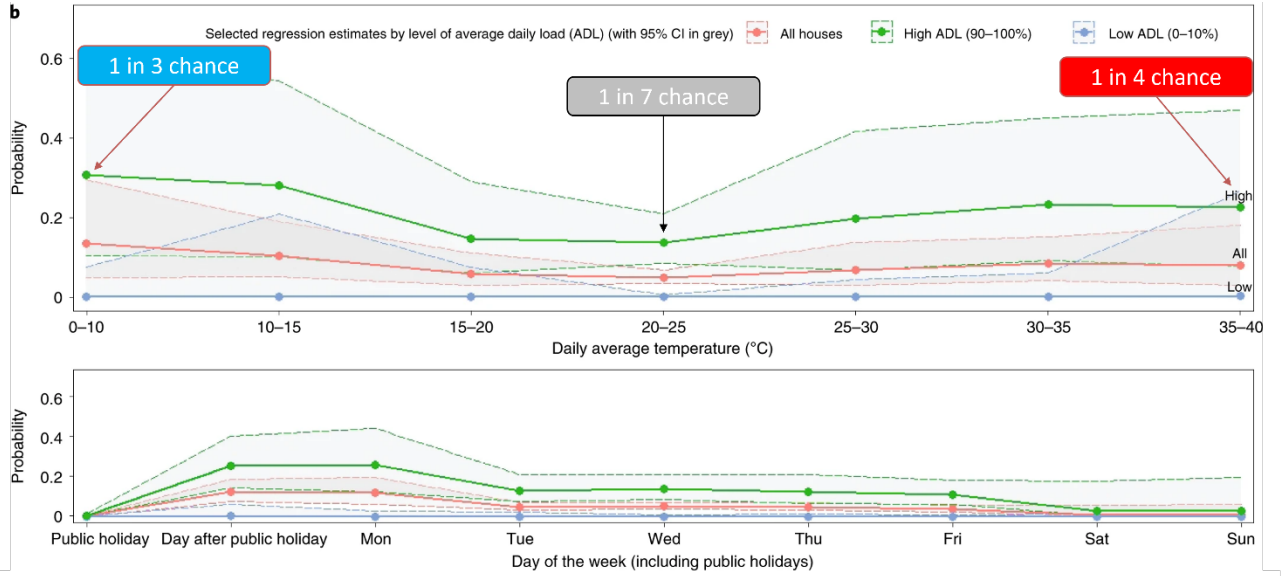
Daily electricity use by temperature.

Hot persistently dry grassland climate zone.

These are the coefficient estimates and 95% confidence intervals from multiple regressions for a sample with 1,674,786 daily observations across 3,300 houses.

Source: created using data from Longden et al. (2022) https://rdcu.be/dsSRX

Figure 2: Probability of a disconnection in central climate zone by daily load and temperature



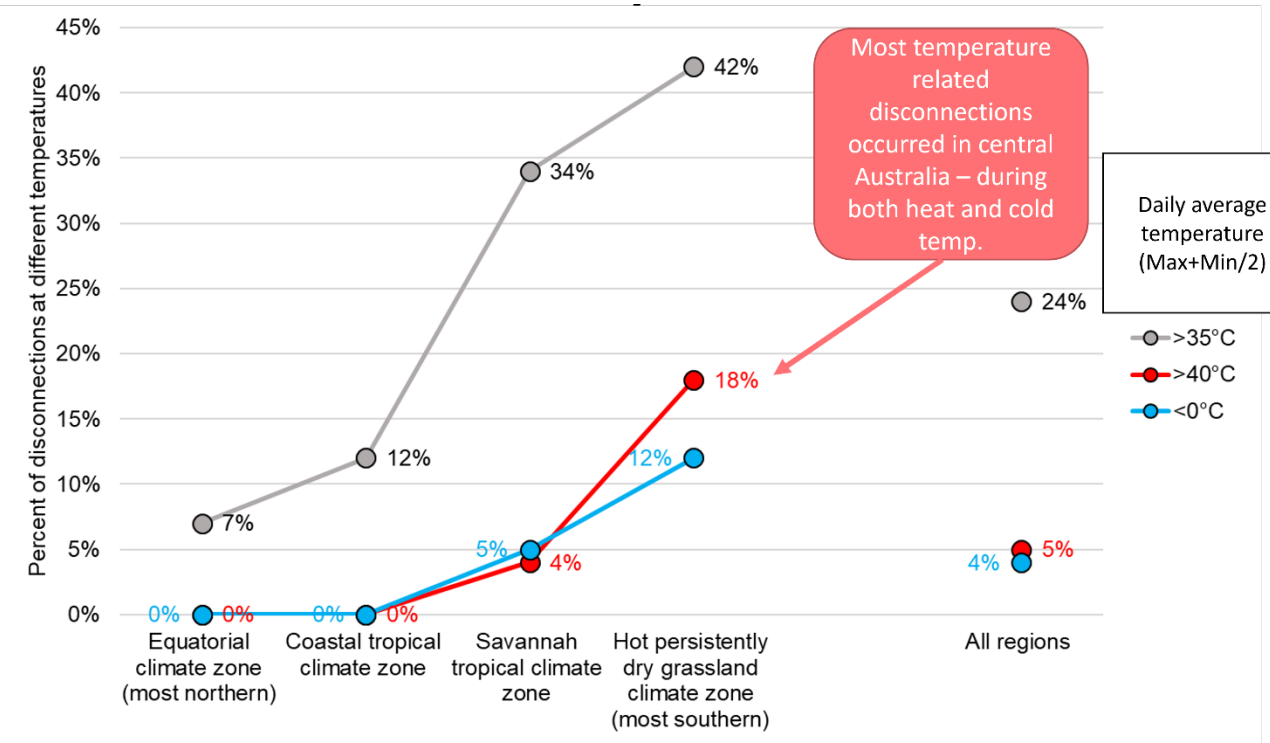
Probability of a same-day disconnection by temperature and day.

Hot persistently dry grassland climate zone.

These are the coefficient estimates and 95% confidence intervals from multiple regressions for a sample with 1,674,786 daily observations across 3,300 houses.

Source: created using data from Longden et al. (2022) https://rdcu.be/dsSRX

Figure 3: Percent of disconnections by climate zones and temperature



Source: created using data from Longden et al. (2022) https://rdcu.be/dsSRX

Recent improvements in reporting of disconnection events

Riley et al (2023) noted that within jurisdictions regulated by the National Energy Customer Framework (NECF) less than 1% (<61,000) of more than 6.7 million households in the NEM are recorded as experiencing a single disconnection event within an annual reporting window (Australian Energy Regulator 2019).

In the last few years, jurisdictions have started reporting disconnection events. These are the most recent reporting of data known at time of writing:

- In the Northern Territory for 2022/23, there were 2,430 prepayment meters capable of reporting self-disconnections. There were 103,895 disconnection events reported, which is an increase from previous years (89,252 in 2021/22], 84,439 in 2020/21) [ii]. Note that this data is provided by Jacana Energy and does not cover all prepayment meters in the NT. It is for those households using prepay in the four major centres of Darwin, Katherine, Tennant Creek, and Alice Springs [iii].
- In Western Australia for 2023/24, there were 9256 disconnections where a customer was disconnected for longer than two hours more than once in a month [iv]. There are 1425 households using prepayment and they had 49,302 disconnection events [v].
- In South Australia in June 2023, there were 392 households using prepayment for electricity and they had 1,115 disconnection events. The data is unbalance as 2022-23 was during the early phase of the roll out. Overall, there were 5,140 disconnection events in the 2022-23 financial year. 651 were cases where there >3 self-disconnections for >240mins in a 3-month period [vi]. No updates to this data since mid-2023.

The existing National Energy Retail Rule definition of payment difficulties and hardship defines that a prepayment meter customer is identified as experiencing payment difficulty if:

a) a small customer with a prepayment meter market retail contract informs the retailer in writing or by telephone that the customer is experiencing payment difficulties; or

b) the retailer's management system identifies to the retailer that a small customer has self-disconnected 3 or more times in any 3-month period for longer than 240 minutes on each occasion[vii].

Relevant Closing the Gap targets

***Closing the Gap Socioeconomic outcome area 9*: Aboriginal and Torres Strait Islander people secure appropriate, affordable housing that is aligned with their priorities and need.**

***Closing the Gap Target 9B*:**

By 2031, all Aboriginal and Torres Strait Islander households:

within discrete Aboriginal or Torres Strait Islander communities receive essential services that meet or exceed the relevant jurisdictional standard

in or near to a town receive essential services that meet or exceed the same standard as applies generally within the town (including if the household might be classified for other purposes as a part of a discrete settlement such as a "town camp" or "town based reserve").

Note that this target was not measured in the last assessment. The Closing the Gap Annual Data Compilation Report July 2024 states that: *Data on 'community infrastructure', measuring access to and quality of essential services – Target 9B – has not yet been collected to establish a baseline.* (Productivity Commission, 2024).[viii]

***Closing the Gap Socioeconomic outcome area 17*: Aboriginal and Torres Strait Islander people have access to information and services enabling participation in informed decision-making regarding their own lives.**

Energy data reporting and data access practices should be comparable with other Australian communities. This should include mandates for the reporting of critical information, such as the rate of electricity disconnections for First Nations communities. In recent years, these data have started to be reported. But this is not by all utilities and jurisdictions.

Extent and efficacy of policy, legislative, regulatory and funding frameworks, including the overlap or any gaps between federal, state and territory frameworks

Consistent regulations across metropolitan, regional, and remote areas are needed. Regulatory differences can be extreme. It is concerning that energy regulation disparities include life support protections, guaranteed service levels, and disconnection reporting requirements.

White et al. (2024) assessed whether communities receive five types of protections[ix]. These are:

(1) life-support protections,
(2) guaranteed service levels,
(3) clear solar connection processes,
(4) disconnection reporting requirements, and
(5) complaints process clarity and independence.

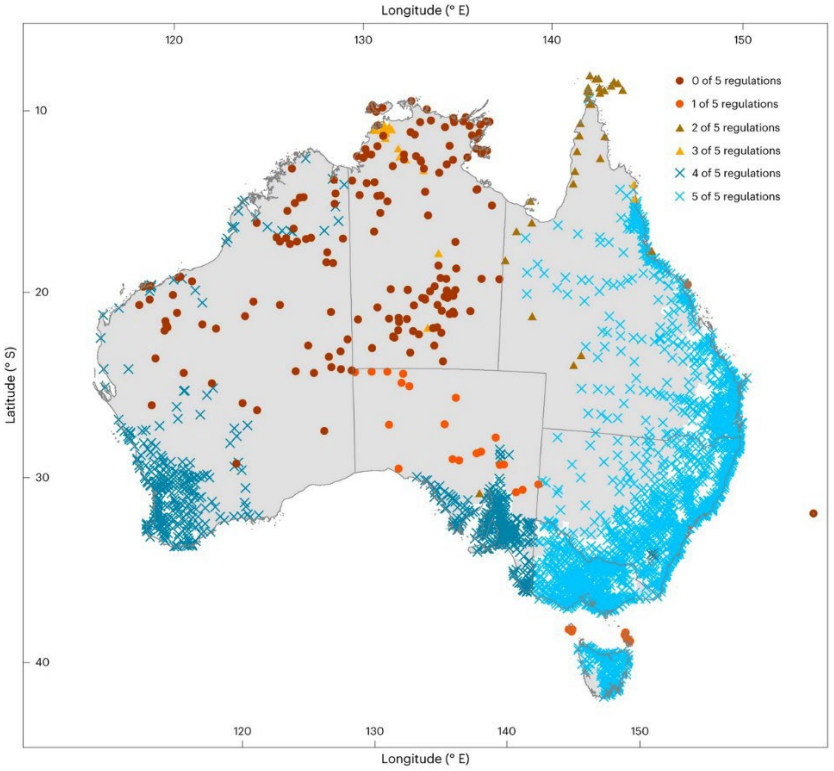
White et al. (2024) finds that First Nations communities are 15% more likely to be underserved across multiple metrics and remote communities are 18% more likely to be underserved.

First Nations settlements are:

- 48% less likely to have solar connection clarity,
- 10% less likely to have complaints process clarity,
- 61% less likely to have life support protections,
- 46% less likely to have guaranteed service levels, and
- 63% less likely to have disconnection reporting requirements.

These data are also displayed in a Guardian news article: https://www.theguardian.com/australia-news/2024/feb/05/one-in-five-australians-lack-basic-consumer-electricity-protections-research-finds

Figure 4: Absence of legal protections across multiple dimensions – including cases of zero



Source: White et al. (2024) https://doi.org/10.1038/s41560-023-01422-5

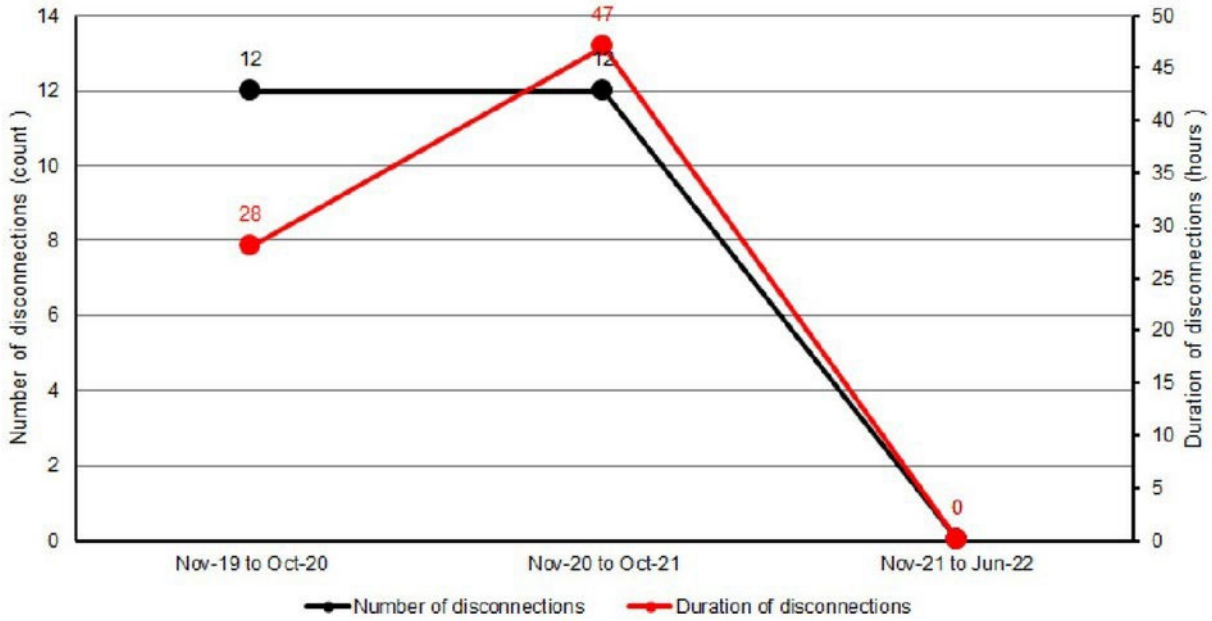
Potential for great net benefits despite a lack of clear solar connection process

In relation to getting roof-top solar connected, Riley et al. (2023) details a case study of residents who were the first to install and grid-connect rooftop solar to a prepay home in Australia's remote Northern Territory. In this case, the network provider Power and Water Corporation had no existing precedent to easily facilitate connection of solar with prepay metering.

Power and Water Corporation and Jacana subsequently committed to ensuring the project progressed on the basis of cooperating in a trial led by Original Power [x].

After installing roof-top solar PV, there has been an observable reduction in household energy drawn from the grid, reduced energy expenditure, and there were no more self-disconnections (Figure 5).

Figure 5: Number and duration of self-disconnections pre and post solar installation



Source: Riley et al. (2023) https://doi.org/10.1080/00049182.2023.2214959

The challenges and potential actions to improving energy security

There are differences in the likelihood of people being able to install rooftop solar and accessing energy from renewable sources.

Marlinja Microgrid

The Marlinja Microgrid an historic achievement as the first First Nations community-owned and grid connected renewable energy project in Australia. The initial plan for Marlinja was rooftop solar but the Northern Territory government's Department of Housing wasn't prepared to work on the concept, so the community chose to develop a solar microgrid project.

As noted: *A key feature of the Marlinja project is an innovative benefit sharing trial developed by Original Power with support from NT government retailer Jacana Energy to share solar cost savings direct to the meters of Marlinja households. For the first time, First Nations pre-paid meter customers will benefit directly and equitably from their own solar investment, similar to the behind-the-meter benefits received by households with rooftop solar*[xi].

Rooftop solar in Village Camp, Jurnkkurakurr (Tennant Creek)

As mentioned, rooftop solar is extremely rare in remote Indigenous communities.

As noted in a paper that discusses rooftop solar, prepayment for electricity and energy insecurity in remote Australia: *Australia is a world leader in per-capita deployment of rooftop solar photovoltaics (PV) with more than three million households realising benefits including reduced energy bills and improved energy security. However, these benefits are unevenly distributed. Research shows First Nations residents of public housing in remote Australia using prepay metering experience frequent 'self-disconnection' from energy services, a known indicator of energy insecurity. Upfront capital costs and an absence of local regulations codifying the ability to connect solar PV have long locked out these households from realising benefits of energy transition in regions host to world class renewable energy generation potential*[xii].

As noted: *In this case study the network provider PWC had no existing precedent to easily facilitate connection of solar with prepay metering, and the initial (solar) connection application was rejected on the basis of regulatory and technical barriers related to a lack of institutional knowledge about the compatibility of solar and prepay, as well as the absence of a prepaid metering option on the relevant paperwork (Mellor 2022)* [xiii]*. This uncertainty about project sequencing and the lack of an applicable feed-in tariff (FiT) meant delays in connecting the system and in receiving payment for exports, precipitating a complex set of negotiations between residents and their advocates, the electricity distributor and (separately) the retailer, preceding installation. PWC and Jacana subsequently committed to ensuring the project progressed on the basis of cooperating on a trial led by Original Power, for the purpose of integrating rooftop solar PV and prepay.*
…
Connection agreements are a prerequisite for customers to sell the excess energy they generate to the utility. Without a connection agreement rooftop solar cannot be connected to the grid (or local standalone network as the case may be) for load balancing through import and export. The presence or absence of standard connection agreements is recognised as a key factor enabling or inhibiting the amount and types of renewable energy adopted, effectively governing who and where benefits in energy transition (Theo et al. 2017)[xiv]*.*
…
In the NT, the government-owned network provider PWC is responsible for the installation of

electricity metering, including prepay metering. Separately, the Department of Territory Families, Housing and Communities (DTFHC) is responsible for approving all works including permission to install rooftop solar on Territory owned, Council managed housing. In this case study DTFHC required an engineer's report verifying structural integrity of the roof and walls as built, to facilitate installation of rooftop PV. DTFHC required the tenants (NFJ and SMN) sign a tenancy variation committing to fund the removal of all solar panels and balance of system components, should the family discontinue tenancy. Liability for these expenses associated with verifying structural integrity, as well as necessary system maintenance and potential future removal were all assured by (registered charity) Original Power, for the purpose of the trial [xv].

Norman Frank Jupurrurla summarises the process by noting that: *"The community has noticed, they talk about our house, they say 'how come you've got solar?'. I explain we had to put up a lot of arguments … to government, to the housing mob, to Power and Water, to get solar on my roof. The journey here has been a long one, we're really pleased to see that the Northern Territory government is coming to the table. It's taken a lot of persistence and leadership by Original Power and others."* [xvi]

For more detail from the case study of rooftop solar for prepay that describes experiences of authors Serena Morton Nabanunga (SMN) and Norman Frank Jupurrurla (NFJ), tenants of House 4, Village Camp, Tennant Creek (Jurnkkurakurr) in Australia's remote Northern Territory (NT) refer to: Riley, B., White, L. V., Quilty, S., Longden, T., Frank-Jupurrurla, N., Morton Nabanunga, S., & Wilson, S. (2023). Connected: rooftop solar, prepay and reducing energy insecurity in remote Australia. Australian Geographer, 54(3), 325–346. https://doi.org/10.1080/00049182.2023.2214959

Figure 6: Connected to rooftop solar, prepay and reducing energy insecurity in remote Australia

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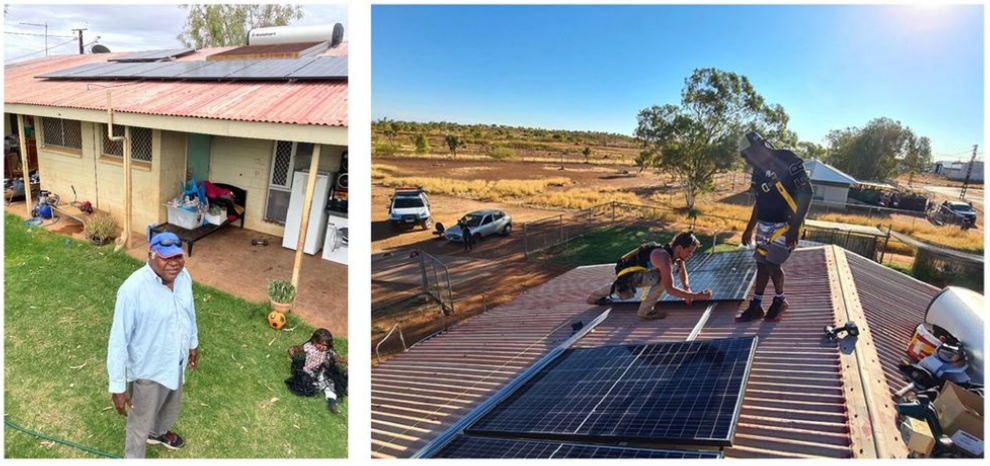
Figure 4. (a) Author Norman Frank Jupururrla at home in Jurnkkurakurr (Tennant Creek) NT (b) Original Power installing 6.6 kW of rooftop solar PV, Village Camp House 4. Note: Photos Original Power.



(a) (b)

Source: Riley et al. (2023) https://doi.org/10.1080/00049182.2023.2214959

[i] Longden, T., Quilty, S., Riley, B. et al. Energy insecurity during temperature extremes in remote Australia. Nat Energy 7, 43–54 (2022). https://rdcu.be/dsSRX
[ii] Northern Territory Electricity Retail Review 2022-23 https://utilicom.nt.gov.au/__data/assets/pdf_file/0005/1375268/NT-Electricity-Retail-Review-2022-23.pdf
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[vii] National Energy Retail Rules – rule 141(2) – Dealing with payment difficulties: https://energy-rules.aemc.gov.au/nerr/354/45386#rule_141.2
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