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FIELD UPDATE · LIVING ON THE BATTERY · SEPTEMBER 2026

The end of kilowatt anxiety

Every RV I have owned shared two things: a noisy, inefficient air conditioner and a tiny battery. A 77 kWh pack under the floor changes what a hot week on the road feels like — and the change is not on any of my spreadsheets.

Adapted and expanded from the author's post on [RVForums.com](#), 17 August 2026 · rev 1 · 2026-09-12

I have owned every type of RV, mostly based in the Southwest, and I mostly camp in summer. With last-century rigs that meant a permanent quest for a power pedestal to stay cool. I have spent most of this year with a datalogger plugged into the truck, chasing fuel numbers and charging efficiency on a [LightShip AE.1](#) towed behind a Ford F-150 PowerBoost — the rig the rest of this site is about. Plenty of spreadsheets. But the thing I actually want to talk about is not on any of them, and I did not see it coming.

How to read the tags. Every number in this piece carries one, and this piece is unusual for this site: its central figure was read off a display by eye, not logged by the instrumentation. That is said plainly wherever it applies.

MEASURED

instrumented by this program, or read from the trailer's own display at a stop.

MODELLED

calculated from measured inputs plus stated assumptions. **REPORTED** a manufacturer specification or someone else's observation. **FLAG** a known problem with the number. **JUDGEMENT** an opinion, labelled as one.

First, the battery — in units we are all used to

The size of it is hard to get your head around until you put it next to what RVs have always carried. A nicely equipped conventional trailer might have 5 kWh of house battery — call it four 100 Ah lithiums. Older rigs with a pair of Group 27 lead-acids are working with about 1.2 kWh they can actually use before they start killing the batteries. The AE.1 carries **77 kWh** under the floor **REPORTED**. That is roughly fifteen times the good lithium setup and something like sixty times the lead-acid one. It is more than five Tesla Powerwalls.

Now put an air conditioner on that. A rooftop unit pulls somewhere around 1.2–1.5 kW while it is running. Run that against the old trailer and you see why kilowatt anxiety was simply part of the deal — an hour of AC, maybe two if you were careful. That is not air conditioning; that is a gesture. It is also why a legacy RV owner is permanently hunting for a pedestal in summer. The pole was not a nice-to-have. At a lot of destinations across America it was life support.

HOUSE BATTERY	NOMINAL	USABLE	ROOFTOP AC AT 1.3 KW, CONTINUOUS	BASIS
Two Group 27 flooded lead-acid	~2.2 kWh	~1.1 kWh	under 1 hour	50% depth of discharge MODELLED
Two 100 Ah LiFePO ₄	~2.6 kWh	~2.3 kWh	under 2 hours	90% usable MODELLED
Four 100 Ah LiFePO ₄ — a well-equipped trailer	~5.1 kWh	~4.6 kWh	about 3½ hours	90% usable MODELLED
LightShip AE.1	77 kWh	~69 kWh	about 53 hours	Published pack; this program's 10% floor REPORTED MODELLED

Conventional bank sizes are typical products at 12 V nominal, not a survey. The AC column is a single rooftop unit running flat out with nothing else on — the worst case, and the one that produced the anxiety. The AE.1's usable figure follows the 10% floor used throughout this site; LightShip's own reserve logic is not published.

What it actually costs to stay cool — one real day

This summer I was on the road for three weeks in the LightShip, successfully finding every heat dome in the country. I finally have a number for this instead of a guess, so here it is.

Daytime highs near 100 °F, overnight lows in the 70s. Climate system left to do its job for a full 24 hours at a 75 °F set point, living in the trailer normally. Over that day the pack lost **22% of state of charge — about 17 kWh off a 77 kWh pack** **MEASURED** **FLAG**.

Not all of that was air conditioning. Best I can tell, roughly 8 kWh of it was base load — refrigerator, pumps, controls, all the things that run whether you are paying attention or not — leaving something like 9 kWh for a full day and night of cooling in near-100 °F heat **MODELLED** . That base-load figure lines up with what I have seen elsewhere on this trailer, which floats somewhere between 200 and 900 W depending mostly on how hard the thermal system is working; the truck-side instrumentation, for what it is worth, sees the trailer drawing about 0.94 kW through the umbilical whenever it is connected but not bulk-charging, which is the same order **MEASURED** .

THE 24-HOUR LEDGER	ENERGY	AVERAGE POWER	BASIS
Net drain from the pack (22% of 77 kWh)	~17 kWh	~0.7 kW	Atlas display, read at each end MEASURED FLAG
of which base load — fridge, pumps, controls	~8 kWh	~0.33 kW	Author's split MODELLED
of which cooling, 24 h at a 75 °F set point	~9 kWh	~0.38 kW	Remainder MODELLED
Roof solar, 1.8 kW array, contributing across the day	not measured	—	Inside the net figure; gross load is higher by this amount FLAG

One 24-hour observation in near-100 °F daytime heat with nights in the 70s. The pack reads in whole percent, so there is about a point of slop at each end — roughly ± 0.8 kWh on 17. The base-load/cooling split is the author's estimate, not a metered one.

Straight-line that and you are at roughly four days before the pack is empty at those temperatures, and call it three to three and a half to a floor you would actually be comfortable stopping at. In a heat dome. With the AC on the whole time.

STOP AT THIS STATE OF CHARGE	ENERGY AVAILABLE FROM FULL	DAYS AT 17 KWH/DAY
0% — pack empty	77 kWh	4.5
10% — this site's usable-energy floor	69 kWh	4.1
20%	62 kWh	3.6
30% — a comfortable margin to move on	54 kWh	3.2

Days of unplugged camping at the observed drain, by where you choose to stop **MODELLED** . Linear in the one observation; a run of hotter nights would shorten every row.

I want to be clear about what this is. It is one observation, read off the Atlas display by eye at each end, not logged data — the trailer does not export state of charge and I cannot record it. Cool nights in the 70s

also do a lot of the work here; a night that stays in the 90s would be a different number, and I have not measured one. And the roof solar was contributing across the day, so 17 kWh is the *net* drain — which is the right basis for "how many days can I sit here," but it is not the gross load. It is also well below the 1–2 kWh per hour for HVAC alone that this program carried as a hot-weather planning figure before the trip; one day does not retire a planning number, but it points in the direction of that number being conservative **FLAG** .

Still. One data point beats zero, and the shape of the answer is *days*, not hours.

Pulling in at 10 PM

The other place the size shows up is a small thing that turns out to be a big thing when you are tired and have been driving all day.

You get into the park late; you are beat. Old way: find the pedestal in the dark, dig out the adapter, sort out whatever 30/50-amp surprise is waiting, hope the breaker holds. New way: go to bed. If there is power and you feel like plugging in tomorrow, fine. If not, also fine. The trailer does not care.

The drive is a charging session

That is before the towing side. With the umbilical connected, the truck's ProPower inverter feeds the trailer the whole time you are rolling. Across seven separate legs the delivered rate held between 5.69 and 6.06 kW — call it **5.8 kW** — and it never sagged with heat: no output derate was observed anywhere in a campaign that reached 104 °F ambient **MEASURED** . So the drive is not draining the house battery. The drive is a charging session that happens to cover 400 miles. The AC ran all day in motion too, so you open the door to a cool trailer instead of a 120 °F oven that needs an hour to recover — and that in-motion cooling is already inside the 24-hour figure above.

DRIVING WITH PROPOWER DELIVERING	AC ENERGY AT THE UMBILICAL	INTO THE PACK	FUEL TO GENERATE IT
Enough to replace one hot day at camp (17 kWh)	~18.5 kWh · ~3.2 h	17 kWh	~2.4 gal
4 hours	23 kWh	~21 kWh	~3.0 gal
6 hours	35 kWh	~32 kWh	~4.5 gal
8 hours	46 kWh	~43 kWh	~6.0 gal

Ceiling figures at the measured 5.8 kW delivery rate and the measured 7.70 kWh AC per gallon of extra fuel, with the trailer's onboard charger taken at ~92% **MODELLED** . A real leg puts back less than the ceiling; once the pack nears its setpoint the

trailer's own battery management cycles the charger on and off, and on the hottest legs I deliberately reduce ProPower to keep engine temperatures down. The fuel column is the price of arriving full — the whole accounting is on the [V2V AC Energy Transfer](#) page.

Put those two together and you can see why the pedestal stops mattering much. A day's driving can put back more than a day at camp takes out — the hot-day drain above is about three hours of charging at rate, for a couple of gallons of fuel. Three weeks on the road and I plugged into a pedestal fewer than half the nights, and most of those nights I really did not have to.

OK, but here is the actual best part

Sleeping. I am serious.

A quick description of the system, because it is not built like anything I have owned before. LightShip calls it AirRight — **20,000 BTU/h** of cooling, **16,000 BTU/h** of heat, **500 CFM** of airflow, all running off the high-voltage pack and set from the Atlas screen **REPORTED**. The equipment lives up in the AeroHub at the nose, not in a box screwed to the roof over your head. From there the cabin ducting runs a semicircle around the bed, about three feet off the floor, and discharges at the top of that loop, so the cool air drifts down over you in a roughly 270-degree arc while you sleep. Once the system reaches the set point you cannot hear it running. That alone is a miracle compared with a Dometic rooftop unit rattling on and off above your head all night.

For the curious: poking around the fuse panel turns up two interior blower fans, three coolant pumps, two radiator fans, plus reversing valves, expansion valves and four pressure transducers. That reads like a reversible refrigerant loop — a heat pump, not a one-way air conditioner — which lines up with the 16,000 BTU/h heat rating **JUDGEMENT**. I will flag that as my read of the hardware list rather than something LightShip documents. The practical upshot is that it moves a lot of air slowly, from a long way away, instead of a little air fast from directly above your face. That is the whole reason it is quiet.

The 24-hour number says the same thing from the other side. Nine kilowatt-hours of cooling over 24 hours is about 375 W on average; a 20,000 BTU/h unit at a plausible coefficient of performance of about three draws roughly 2 kW flat out. So across a near-100 °F day the system averaged something like a fifth of its full electrical output — it spends most of its time turning slowly, not cycling hard **MODELLED**.

What it feels like: 95 °F and humid outside, and you are in a cocoon of cool air moving silently around the perimeter of the bed. No compressor drone six feet above your head. No cycling thump that wakes you at 2 AM. The fan is always running; it never stops, it just changes speed. Like sleeping outside on a cold winter night. I have spent a lot of nights in RVs and I have never slept like that in one.

None of it works without the battery

You could build the same beautifully ducted system into any trailer you like — and if the house bank runs it for ninety minutes, it is a party trick. Seventy-seven kilowatt-hours at 22% a day is what turns it into something you just leave on. And not only for sleeping: the air conditioner runs all day while the trailer is in motion, and that is baked into the 24-hour figure above.

SAME HOT DAY, SAME LIVING, ON EACH BATTERY CLASS	USABLE ENERGY	LASTS
Two Group 27 lead-acid	~1.1 kWh	about 1½ hours
Four 100 Ah LiFePO ₄	~4.6 kWh	about 6½ hours
LightShip AE.1	~69 kWh	about 4 days

The observed 17 kWh/day drain applied to each bank **MODELLED** . The conventional banks could not in practice run this climate system at all; the row is there for the arithmetic, not as a claim about those trailers.

Cool, quiet comfort, a real night's sleep and no kilowatt anxiety. There is no way to make this happen in an RV without a very large battery.

What this piece does not establish

- **A logged drain curve.** The trailer's Atlas display shows state of charge but does not record or export it, so the 22% figure is two whole-percent readings a day apart. Repeating it on a second hot day is the obvious next step; it costs nothing but attention **FLAG** .
- **A night in the 90s.** The observed day had 70s overnight. Everything in the days-of-reserve table shortens if the nights do not cool.
- **Gross versus net.** Solar was contributing and is not metered here. For "how long can I sit here" net is the right number; for sizing the climate system it is not.
- **The base-load split.** The 8 / 9 kWh division between housekeeping and cooling is an estimate. A cool-day repeat of the same 24 hours would measure the base load directly.
- **What a real driving day puts back.** The charging table is a ceiling at rate. The delivered energy on an actual hot leg depends on the trailer's setpoint cycling and on how much ProPower the driver chooses to run, and is reported leg by leg under Test Data.

The Camping Reserve Simulator on this site carries the camp-side drain as an input, so a reader can put their own hot-day figure in and see how many unplugged nights a given trip leaves them.

Disclosure. The author is an early [LightShip AE.1](#) owner who conceived the [Turbo Edition](#) concept and has funded its independent development, including the instrumented testing described here. The [Turbo Edition](#) is a potential product in development — not announced, not released. [LightShip Energy](#) has stated an intent to pursue it, and this work is proof-of-concept testing that bears directly on that decision. The author holds **no financial position** in the [Turbo Edition](#) at the time of writing, and may acquire one if it proceeds; the interest disclosed here is in the outcome, not in an existing stake. This is an independent analysis of field-recorded data; Ford Motor Company, [LightShip Energy](#) and [OBDLink](#) did not participate in it or validate its results. Conclusions are experimental engineering estimates, not manufacturer-certified specifications.

AirRight ratings, pack size and solar array are [LightShip's](#) published specifications. The 5.8 kW delivery rate, the no-derate finding, the 7.70 kWh AC per gallon generation cost and the 0.94 kW connected draw are this program's Campaign 1 measurements ([Campaign1_Closed_Findings_Archive](#)). The ~92% onboard-charger efficiency and the 10% usable-energy floor are the conventions used across this site. The original post and the discussion under it are at [RVForums.com](#).