Electric propulsion assist for towable RVs: what we have learned so far

Two travel trailers now carry a motor on their own axle so the truck pulling them works less. Here is what the physics, the measurements and the owner reports say about what that does — and what it costs the trailer to do it.

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A conventional travel trailer is dead weight: everything it takes to move it — its rolling resistance, its air drag, its share of every hill — comes through the hitch from the tow vehicle. An electric propulsion-assist trailer changes that. It carries a large battery anyway, for living off-grid; the assist option adds a motor to the trailer's axle that draws on that battery to push the trailer along, so the truck feels less of the load. Two shipping products do this today: LightShip's AE.1 with its TrekDrive system, and Pebble's Flow with Easy Tow. The idea is new enough that nobody — the manufacturers included — has published a complete account of what it does. This piece lays out what is known, tags every number by how well it is known, and leaves the conclusions to the reader.

How to read the tags. Every number in this piece carries one. They are not all equal, and the difference is most of the story.

MEASURED instrumented by this program, on one truck and one trailer. MODELLED calculated from measured inputs plus stated assumptions. REPORTED a manufacturer claim, a press test, a YouTube review, or an owner's post — one observation, unverified. FLAG a known problem with the number. JUDGEMENT an opinion, labelled as one.

Both companies now price the motor separately from the trailer — one as an option today, one as a bundle with a motorless version still to come. LightShip's configurator lists the AE.1 at $157,500 and its TrekDrive self-propulsion system as a **$20,000** option REPORTED — LightShip formerly sold TrekDrive bundled into named trims; it now sells one model with the motor as an option. Pebble's Flow launched at $109,500 and the Magic Pack — which brings the Easy Tow motors, but also a self-hitching coupler, remote manoeuvring and automated waste dumping — is **$139,500**, a $26,000–30,000 step that Pebble has never split into its parts, and a motorless Flow is currently listed as a future model REPORTED. In both cases the battery comes with the trailer regardless: the AE.1 carries a **77 kWh** pack, of which this program treats about **69 kWh** as usable after a 10% floor MODELLED; the Flow carries a **45 kWh** pack, of which about **40 kWh** is usable

above a reserve the trailer enforces itself REPORTED. The option, then, is whether the battery the trailer carries anyway should also turn a wheel.

Where the numbers come from

The two products are not sourced alike, and a reader should know that before comparing a figure from one column with a figure from the other.

LightShip AE.1. The author owns one and has towed it roughly 6,000 miles behind an instrumented Ford F-150 PowerBoost hybrid, logging 42–46 engine and hybrid-system channels at one to two samples per second, with GPS, over two test campaigns totalling more than 4,000 miles. Every figure tagged MEASURED in this piece comes from that program, and every one of them describes the AE.1 behind that one truck. The AE.1's trailer-side battery draw is *not* among them: the trailer does not log or export its own energy data, so the trailer's cost per mile rests on LightShip's published specification, this program's road-load model, and readings taken off the trailer's display by an outside reviewer (Out of Spec Reviews, April 2026). LightShip's own published towing figures — a Lightning at 2.11 mi/kWh, a Rivian at 2.03 — are quoted as manufacturer statements; they were produced with TrekDrive active and do not report what the trailer spent.

Pebble Flow. The author has not towed, instrumented or measured one. Every Pebble figure is a published specification, a manufacturer statement or blog post, a press test, a reviewer's on-camera reading, or an owner's report on an owner forum or in a video. Seven to ten independent owner or reviewer observations underlie the Pebble numbers, and this piece has tried to count each observation once however many places it was reposted. Where an owner supplied both truck and trailer energy for the same leg, that is noted; most did not. Nothing in the Pebble column is tagged MEASURED, and nothing should be read as though it were.

Where the two are compared directly — assist output at 70 mph, for instance — the AE.1 side is a reviewer's reading and the Pebble side is the same reviewer's reading, on the same basis. That is the fairest comparison available; it is still one reviewer, one session per trailer, and dates that do not match.

Two trailers, two different problems to solve

The two systems are often compared as if they were the same device on different trailers. They are not, and the trailers themselves explain much of the difference.

TRAILER	WEIGHT	HEIGHT · FRONTAL AREA	AERODYNAMIC CONSEQUENCE
LightShip AE.1, road mode	7,450 lb dry · 8,400 lb GVWR	83 in · ~58 ft²	Roof retracts for towing; the body sits largely inside the tow vehicle's wake. Published Cd 0.46 for the towed combination REPORTED

TRAILER	WEIGHT	HEIGHT · FRONTAL AREA	AERODYNAMIC CONSEQUENCE
Pebble Flow	5,800 lb dry · 6,800 lb GVWR	105 in · ~66 ft²	Roughly two feet of body stands above a pickup's wake in free stream; this program's estimate is 8–18% more drag area than the AE.1 MODELLED

Published dimensions and weights; the wake and drag-area estimate is this program's, from the height difference and the AE.1's measured road load, and has not been tested in a wind tunnel or on a coastdown.

So the AE.1 is about 1,400 lb heavier but presents less drag at highway speed, and carries a battery 70% larger. The Flow is lighter, taller, and has less energy aboard. Those facts plausibly drove the design choices: LightShip built a closed-loop system that measures hitch force and pushes until it reads zero — the trailer carrying its entire load — because its battery can afford to for a full day's drive. Pebble built an open-loop, speed-indexed schedule its CEO describes as assisting "about half its own weight," capped well below the motors' rating — a smaller push from a smaller pack, on a trailer that costs more to move at speed. Neither choice is wrong; each fits its trailer. What follows should be read with that in mind.

What the motor actually does

The pitch is intuitive: a trailer that pushes itself is a trailer the truck doesn't feel. The intuition is correct, and it is also where most of the confusion starts, because it suggests the motor is *saving* energy. It is not. It is *moving* energy — out of the trailer's battery, onto the road, in place of energy the truck would otherwise have spent.

The observations on file are consistent with this. In every case where both the truck's consumption and the trailer's battery were recorded, the trailer spent roughly what the truck saved. A Cybertruck owner towing a Pebble from San Jose to San Luis Obispo logged the truck at 526 Wh/mi and the trailer at 152 Wh/mi; the system total of 678 Wh/mi was within 1.3% of what the same truck would have spent towing the trailer with no motor at all REPORTED. The motor made the truck's dashboard look 20% better and the rig's energy bill essentially unchanged.

> **Transfer ratio** `TR` — the energy per mile the truck stops spending, divided by the energy per mile the trailer's battery starts spending, both measured at the same speed on the same road. Physics puts it near **1.0**: the trailer's motor and inverter lose about 10% getting energy to the road, and the truck's driveline would have lost about the same, so the two cancel. That holds for two electric drivetrains of similar efficiency on level road; on a descent the trailer can bank energy the truck would have braked away, and that case is treated separately below. On the flat the ceiling is about **1.05–1.10**. Any assist claim that implies a higher ratio is either mis-measured or describes the trailer shoving the truck, which has been observed on both products.

The transfer ratio is the single most useful check on any assist claim. Pebble publishes a 29% truck-side saving from a Rivian test at 55 mph REPORTED. Two independent owners with paired on/off segments find 18–20% REPORTED. LightShip's position, in round numbers, is that the AE.1's low-drag towing shape with the canopy down and TrekDrive together return the tow vehicle to roughly the range or fuel economy it gets when not towing at all — the company's "go twice as far" claim — and that the improvement splits about half to aerodynamics and half to propulsion REPORTED. The only decomposed, instrumented figure this program holds — a Ford F-150 PowerBoost hybrid towing an AE.1 on matched back-to-back loops — is a **27.8%** reduction in propulsion fuel with the motor on MEASURED. None of these are lies. All of them are one half of a two-sided ledger, and the half they leave out is what the trailer paid.

What the trailer pays

The trailer's cost of assist is energy out of its own battery per mile, and it depends on speed and on how hard each system pushes.

TRAILER · SYSTEM	SPEED	BATTERY SPEND	BASIS
AE.1 · TrekDrive	~55–58 mph	250 Wh/mi	LightShip's published figure, to zero hitch force; speed not stated, reconciled by this program REPORTED
AE.1 · TrekDrive	62 mph	~273 Wh/mi	Road-load model, chain efficiency 0.9 MODELLED
AE.1 · TrekDrive	70 mph, flat	300–314 Wh/mi	21–22 kW read off the trailer's display, Out of Spec review, one run, April 2026 firmware REPORTED
Pebble · Easy Tow	60 mph	167–183 Wh/mi	10–11 kW, Out of Spec review, one run REPORTED
Pebble · Easy Tow	70 mph, flat	~200 Wh/mi	13–15 kW, same session REPORTED

Trailer battery energy per assisted mile. The AE.1 pushes until the hitch reads zero force; the Pebble delivers a fixed, speed-indexed power that its makers describe as "about half its own weight." That is why the Pebble spends less per mile — and why it removes less from the truck.

Two things follow. First, at highway speed the AE.1 spends about 1.5× what the Pebble does, and takes roughly proportionally more off the truck; neither is more *efficient*, they are pushing different amounts. Second, the Pebble's energy per mile rises only about linearly with speed while the trailer's aerodynamic energy per mile rises with the square — so at 70 mph its motors cover a smaller share of the trailer's load than at 55, and the truck feels more of it. Owner reports bear this out: truck-side deficits with Easy Tow on range from ~10% in mixed driving to ~34% at 70–75 mph REPORTED.

Where the energy comes back from — by tow vehicle

Since assist neither creates nor destroys energy, what it does for a rig is set by one thing — what a trailer-battery kilowatt-hour costs to replace, compared with what a truck kilowatt-hour (or a tenth of a gallon) is worth to the owner. That answer differs completely by tow vehicle, so the ledger has to be kept three times.

Gasoline or diesel truck without a generator

Nothing refills the trailer on the road except solar, which contributes a few hundred watts. Every kilowatt-hour spent pushing is a kilowatt-hour that will not be at camp for the air conditioner or the fridge. The fuel it saves is real but small — about 0.09 gallons per kWh on a typical engine MODELLED, roughly $0.35. The trade is camping reserve for a lighter load on the engine, and how an owner values that depends on where the trip ends.

Hybrid truck with a bed generator (the case this program measured)

The F-150 PowerBoost can recharge the trailer while driving through a 5.8 kW umbilical MEASURED. That sounds like it should make assist free. It does the opposite. Generating a trailer kilowatt-hour from the truck's engine costs about 0.13 gallons; spending that kilowatt-hour on assist saves about 0.09 MEASURED. On the matched calibration loops, assist saved 0.57 gallons MEASURED; putting the trailer's energy back would have cost 1.1–1.7 gallons on the three trailer-draw assumptions examined, since the trailer side was not logged MODELLED — **net negative on every basis tried**. The interlock that prevents charging and assisting at the same time compounds it: replacing an assisted mile takes about three minutes of generator-on driving, so a self-sustaining rig can assist no more than 25–30% of the time MODELLED.

With a plug at every night's destination, the ledger flips: replayed over a 3,700-mile campaign, load-triggered assist would have saved about 4.8% of fuel, roughly 12 gallons, or about $50 MODELLED.

Electric truck

Here the currency is range, not fuel, and the arithmetic changes character. Towing a trailer this size costs an EV about 45% of its range — confirmed to within 1% on a Cybertruck and an AE.1 REPORTED. A trailer that carries its own load hands that range back for as long as its battery lasts: the AE.1's ~69 usable kWh is roughly one fast-charging stop's worth. A Sierra EV owner reports about 400 miles towing an AE.1 with TrekDrive on, where the no-assist convention predicts ~240 REPORTED. One Pebble owner ran 9,920 miles in 105 days on a Rivian and fast-charged the trailer exactly once, planning around ~200-mile days REPORTED.

The other side of that is time. Assist moves energy from the fastest-charging battery in the rig to the slowest. A truck kilowatt-hour comes back at a 200 kW charger in about 20 seconds; a trailer kilowatt-hour comes back at 44 kW (Pebble, working today) in 80 seconds, or at 6.6–7.2 kW on a campground pedestal in about nine minutes. The AE.1's 150 kW fast-charge hardware is fitted but, as of the last public report in spring 2026, not enabled; readers should confirm the current state of both trailers' charging before weighing this REPORTED.

WHERE THE TRAILER RECHARGES	AE.1 · MIN PER ASSISTED MILE	PEBBLE · MIN PER ASSISTED MILE
Campground 240 V pedestal (7.2 / 6.6 kW)	2.5	1.8
DC fast charger (150 kW when enabled / 44 kW)	0.12	0.26
Hybrid truck's generator, while driving	3.1 (of generator-on driving)	—
"Recharge" mode, trailer generating while towed (Pebble, ~5 kW)	—	2.4 (of Recharge driving, paid by the truck)

Minutes of trailer charging needed to replace one mile of assist at ~62 mph (AE.1 ~273 Wh/mi, Pebble ~175), including an 8–10% onboard-charger loss on the AC and generator rows MODELLED. On a campground pedestal overnight this is time already spent; at a charger on the road it is not. For an EV tower the comparable metric is trailer-charging minutes added per truck-charging minute avoided: about 4–5× on a Pebble at a fast charger, 25–30× on either trailer at a pedestal.

So for an EV owner the range comes back and the time cost lands wherever the trailer recharges — at a plug that was part of the plan anyway, or at a stop made for the purpose.

Try it yourself

The interaction between assist, charging and camping reserve is easier to see than to describe, and this program's Camping Reserve Simulator exists for exactly that. It models a trip behind any of five electric trucks, the PowerBoost hybrid, a gasoline half-ton or a diesel three-quarter-ton, and reports how much energy is left in the trailer at camp (the **Total Camping Reserve**), how many travel days the trip takes, how many charging or fuel stops it needs, and what state both batteries arrive in. The LightShip AE.1 is the trailer modelled, on the measured and modelled figures in this article.

A useful first experiment: pick a tow vehicle, enter a trip distance and road type, and run it with the TrekDrive duty at zero. Then run it again with duty at 100% and the assist cost at the "250 Wh/mi" basis. Behind an electric truck, watch the number of charging stops fall and the trailer's arrival reserve fall with it; behind the PowerBoost, watch the fuel line move a little and the reserve move a lot; behind a gasoline truck with no generator, watch the reserve alone. Then change one thing — a campground with hookups instead of without, a mountain road instead of interstate, a departure at 80% instead of 100% — and see which of the three numbers moves. The simulator does not pass judgement; it shows the trade the motor makes on the trip the reader actually plans to take. Everything it assumes is stated on the page, and every constant carries the same evidence tag used here.

What happens in the mountains

Everything above is flat-road accounting. On a long descent, a heavy trailer is a generator: its share of the gravity pull, minus its own rolling and air drag, is energy that would otherwise go into hot brakes. A trailer axle motor captures it. Replaying a real crossing of Colorado's I-70 passes through the trailer model, each Eisenhower-class descent banks about 4.5 kWh; a mountain campaign of 3,700 miles banked 33 kWh at zero fuel cost `MODELLED`. On the way up, that banked energy can be spent on exactly the climbs where a truck's engine is hottest and its economy worst.

This is the one case where the motor adds reserve on the road rather than consuming it, on any tow vehicle, and it relieves the truck's brakes as well. Two limits: an electric or hybrid truck already recovers part of a descent through its own regeneration, so the trailer's harvest has to be judged against that rather than against zero; and in fuel terms 33 kWh is about three gallons — what it adds is reserve and brake relief. It is also the case least supported by measurement — the harvest figures are a replay of measured grades through a modelled trailer, and the trailer-side regen efficiency is assumed.

Weight, complexity, and what can go wrong

Neither company publishes the weight of its drive system, and no independent figure exists; Pebble's spec sheet prints one dry weight for every trim, motors or not FLAG. What is known is the architecture. The AE.1 uses a single automotive-style electric drive unit — motor, inverter and reduction gearing driving both wheels through half-shafts — rated by one reviewer at 20 kW continuous and 75 kW peak REPORTED, a figure that matches the ~75 kW ceiling read off the trailer during a hard merge. The Pebble mounts two smaller motors at the wheel ends of its single axle, one per wheel, with no differential; their rating is unpublished, and reports range from 60 to 160 kW installed FLAG. Scaling from production drive units of similar power gives the following.

ADDED BY THE MOTOR OPTION	AE.1 · TREKDRIVE	PEBBLE · EASY TOW
Drive unit(s)	60–85 kg · one EDU	70–100 kg · two wheel-end units
Half-shafts, mounts, subframe, cooling	25–40 kg	15–25 kg
HV cabling, contactors, junction box, sensors	10–15 kg	10–15 kg
Total	**~95–140 kg · 210–310 lb**	**~95–140 kg · 210–310 lb**
Share of gross weight rating	2.5–3.7% of 8,400 lb	3.1–4.5% of 6,800 lb
Share of carrying capacity (GVWR − dry)	~22–33% of ~950 lb	~21–31% of 1,000 lb

Author's estimate from automotive analogues — a 75 kW-peak drive unit sits between a Chevrolet Bolt's (~76 kg) and a Tesla Model 3 rear unit's (~90 kg at far higher power). No manufacturer figure exists for either trailer MODELLED. The two architectures trade a differential and shafts for a second inverter and land within a few kilograms of each other.

Call it 250 pounds either way — one adult passenger, roughly a fifth to a quarter of what the battery already weighs, and about a quarter of the payload either trailer is rated to carry. That last figure is the one an owner feels: it comes straight out of water, gear and groceries. It costs perhaps 1% in towing energy on the flat and a little more on climbs. Weight is real; it is a payload matter more than an efficiency one.

On complexity, what the owner reports and the reviews document, on both products:

- **Both systems are a switch.** On or off. Neither offers the driver any control over how hard or when. The AE.1 follows its hitch sensor; the Pebble follows a fixed schedule. Neither knows the grade ahead, the route, or where the rig will charge tonight.
- **Both have been seen pushing the truck** — the AE.1 as a control overshoot on a hot calibration, the Pebble because an open-loop schedule cannot know it delivered too much REPORTED.

- **The AE.1 shuts itself off in seven conditions**, including ambient above 110 °F, climbs longer than 10 miles at 6% or steeper, and any brake application; it also tapers sharply above ~72 mph and cuts out at 77 REPORTED. The Pebble's output is software-capped at roughly 9% of its installed motor power REPORTED.
- **Pairing with the tow vehicle is a set-up step.** In one review, TrekDrive did not engage behind a Cybertruck until a configuration problem on the truck side was found and corrected, on camera; it is not reported as an ongoing issue. LightShip calibrates TrekDrive at the factory with a factory tow vehicle, not to each customer's truck REPORTED.
- **Behaviour is firmware-dependent.** Both companies ship monthly updates. The assist figures quoted here describe the software of the day they were taken.

JUDGEMENT The hardware is serious engineering on both trailers. The control policy is simpler than the hardware: an assist that always does the same thing can only be right on average, and the flat-road ledger above is where "on average" shows.

How the two implementations differ

The AE.1 has a hitch-force sensor and closes a loop on it; it pushes as hard as the road demands and no harder, and it has the larger battery to push with. That is the architecture anything smarter would be built on. Its limits today are that its fast charging is not enabled — so every assisted mile on an EV comes back at pedestal speed — and that its shutdown list is long.

The Pebble's motors are open-loop and capped, so they never fully carry the trailer, and its battery is 40% smaller; its equivalent of "zero hitch force" would cost 325–390 Wh/mi it does not deliver MODELLED. Its strengths are that its 44 kW fast charging works today, its aft charge port and Recharge mode give it a road-side energy path the AE.1 lacks, and its Magic Pack brings other things besides motors.

JUDGEMENT As a platform, the AE.1's closed-loop hitch sensing is the more capable foundation for whatever comes next. As a shipping product for an EV tower who wants to fast-charge the trailer on a road day, the Pebble's implementation is the more usable one this year. Both observations follow from the trailers they were designed for.

Where the concept could go next

Every limitation catalogued above traces to the same thing: the motor controller acts on what it can sense at the hitch or the wheels, and nothing else. It does not know how far it is to the next plug, whether there is a pass ahead, whether the truck's engine is hot, or what the owner would rather protect — range today or reserve tonight. Several approaches would close that gap, and they are not mutually exclusive:

- **A driver control beyond on/off.** A duty or intensity setting, so an owner can ask for half the assist on a flat day and all of it on a climb. The simplest change, and the one that costs the manufacturers least.
- **A grade-aware mode.** Assist on climbs, harvest on descents, idle in between — the routine an experienced owner already runs by hand at each summit, automated from the trailer's own grade sensing.
- **A charging-horizon input.** Tell the trailer where the next plug is and what reserve to arrive with, and let it spend down to that budget. Pebble's app already exposes an arrival-charge target for Easy Tow; whether it modulates against it is undocumented.
- **A tow-vehicle-aware trigger.** Fire the assist on the truck's own load and thermal state rather than on hitch force alone. This is the layer this program has specified for the AE.1 behind a hybrid truck, under the name TurboAssist: a supervisory trim on the existing controller's gain, never a command to the motor. Replayed over the measured campaign, a charging-horizon and grade-aware policy banks the 33 kWh of descent energy at zero fuel change under self-charging and captures the full 4.8% fuel saving under nightly charging `MODELLED` — with the caveat that the replay knew the grades and the plug in advance, which a deployed controller will not, and that no policy changes the thermal lockouts, the pairing requirements or the charging rates, which are hardware and firmware limits.
- **More regeneration capacity.** The descent harvest scales with the motor rating and the pack's charge acceptance. An 80 kW-class motor on a full pack banks less than the same motor on a pack with headroom, which argues for coordinating charging with the terrain ahead as much as for bigger hardware.

What the manufacturers have said

Neither company has publicly announced a plan for a route-aware or truck-aware assist. What is on the record, as of September 2026:

- **LightShip.** In a public interview in August 2026, co-founder Ben Parker said TrekDrive shipped deliberately conservative — if anything "might be going wrong" it shuts down and the trailer reverts to freewheeling — and that the two or three software releases pushed so far were reliability improvements to reduce those spurious shutdowns, with the envelope being opened gradually as owners accumulate miles `REPORTED`. LightShip has told the author that enhancements are under consideration for the TrekDrive roadmap, without saying which. It has made no statement about TurboAssist or any of the specific approaches above.
- **Pebble.** Pebble ships monthly over-the-air updates and has added features that way — Boondocking Mode and surround-view cameras in August 2026 — and its CEO has said in general terms that owner miles feed product improvement `REPORTED`. Its only statement specific to Easy Tow, from April 2024, is that the company was "committed to further testing and enhancing performance ahead of production." Nothing since names a planned change to how Easy Tow decides how hard to push.

An owner today is buying the switch, with a manufacturer's general promise of software updates and no specific promise about any of this.

What nobody has measured yet

The state of the evidence is that no one — not this program, not the manufacturers, not a reviewer — has published a single controlled measurement with both sides of the ledger: trailer battery drawn down and truck consumption reduced, same road, same speed, assist on and off. Everything above is assembled from halves. The gaps that matter most:

- **A green transfer ratio for either trailer.** One matched on/off run with both batteries read at the endpoints. The AE.1's hybrid-truck pair implies 0.7–0.8; the Pebble's owner data implies about 1.0; both are on modelled or unstated trailer figures FLAG.
- **The stability and braking benefit.** Zero hitch force plausibly means less sway and lets a lighter-duty truck pull the trailer — though it does nothing for that truck's braking or tongue-weight ratings; nothing on file quantifies any of it. It may be the largest thing the option does, and it appears nowhere in Wh/mi.
- **Descent harvest, measured.** The 4.5 kWh-per-pass figure is a replay; the regen efficiency behind it is assumed.
- **The weight of the motor system**, on either trailer, from a scale. The 250 lb above is an estimate; the same trailer weighed with and without would settle it in an afternoon.
- **Reliability over years.** Shutdowns, pairing faults and firmware drift are all documented as events; none is documented as a rate.
- **Motor ratings.** The AE.1's is reported at 20 kW continuous / 75 kW peak and was observed at ~75 kW; the Pebble's is unpublished and variously reported at 60, 80 and 160 kW FLAG. This scales every mountain figure.

How it lands, by tow vehicle

EV tow vehicle
Lightning, Rivian, Cybertruck, Silverado / Sierra EV

A RANGE EXTENDER THAT NEEDS A PLUG

The trailer battery is worth about one fast-charge stop per day. While it lasts, the 45% towing penalty falls to roughly 20–35% at highway speed on the Pebble by owner data, and to near zero on the AE.1 in the one run on file and by the manufacturer's own claim. The energy comes back at the trailer's charging rate, wherever that happens.

Hybrid truck with a generator
F-150 PowerBoost and similar

MEASURED NET-NEGATIVE ON FUEL WHEN SELF-CHARGED

The generator's product is arriving at camp with a full trailer; the motor's is descent harvest and summit climbs, or a fuel saving of a few percent where there is a plug at night.

Gasoline or diesel truck, no generator	CAMPING RESERVE TRADED FOR ENGINE LOAD On flat roads the motor spends reserve to save about 35 cents a kilowatt-hour of fuel. On a long descent it is the only thing in the rig that adds reserve while moving.
Fuel savings alone	ABOUT $50 PER LONG TRIP The best measured and modelled case on file. The option's fuel line is small under every assumption examined; what it does for range, reserve and brakes is where the rest of this article lives.
The software to come	UNDER CONSIDERATION, UNSPECIFIED The hardware is capable of more than the current on/off control lets it do, and the approaches are well understood. Both manufacturers say they are improving their systems; neither has said how.

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.

Every Pebble Flow figure is a published specification, a manufacturer statement, or a third-party or owner observation; none is this program's measurement. Prices: LightShip base and TrekDrive option from the company's online configurator, September 2026; Pebble Magic Pack $135,500 at order opening (Nov 2025) plus the announced $4,000 increase of 15 Dec 2025; Pebble base $109,500 at launch, now listed as a future model without a price. The 20 kW / 75 kW TrekDrive rating is from The Autopian's production report. Drive-system weights are the author's estimates and no manufacturer figure exists. Prices change by build generation. Sources are catalogued in the program's knowledge base: `Campaign1_Closed_Findings_Archive` §5, `Pebble_Input_Inventory_2026-08-30`, `LightShip_OutOfSpec_Session_Findings_2026-09-01`, `Pebble_OutOfSpec_Session_Findings_2026-09-01`, `TrekDrive_Value_by_Tow_Vehicle_Class_2026-09-07`, `TurboAssist_Charging_Horizon_and_Descent_Harvest_2026-09-07`, `Simulator_Change_Plan_from_OutOfSpec_Sessions_2026-09-01`.