Arbitrage Tracker (gw-pi2, Sezibwa)

Cumulative record of the TOU battery arbitrage on gw-pi2 (Sezibwa). Each night the inverter discharges the battery during a peak-tariff window and recharges it from the grid at the off-peak rate from 00:00. Daily progress goes to the Element business room; this page is the running record. It is rebuilt from the OpenEMS backend by `NFE/CUSTOM_CODE/solar-sim/arbitrage_tracker.py`.

Last updated: 2026-09-29 00:12 EAT.

Totals

Measure	Value
Nights armed	2
Energy shifted to peak	5.4 kWh
Estimated net saving	1,013 UGX
Average per armed night	2.68 kWh, 507 UGX
Projected per month at that rate	15,199 UGX

Night by night

Night	Config	Window	Start	SoC start	SoC end	Shifted (kWh)	Peak (kW)	Lowest pack (V)	Saving (UGX)	Recharge 00-06 (kWh)	Notes
2026-09-26	v12	22:00-23:59	22:03	78%	48%	3.08	6.1	50.96	582	5.9	first armed night

Night	Config	Window	Start	SoC start	SoC end	Shifted (kWh)	Peak (kW)	Lowest pack (V)	Saving (UGX)	Recharge 00-06 (kWh)	Notes
2026-09-27	v13	off				0			0	4.5	disarmed: SoC 65% after the 27 Sep overload outage
2026-09-28	v14	21:30-23:30	21:33	87%	64%	2.28	4.6	51.45	432	1.1	window moved to 21:30-23:30; recharge still running

Where to tweak

- **Unused battery headroom:** the battery ends the window with an average 1.2 kWh above the 45% disarm floor (218 UGX a night if shifted too). A longer or earlier window could use it.
- **Peak energy still bought from the grid:** 6.4 kWh a night between 18:00 and midnight falls outside the window. That is the ceiling for more shifting, limited by battery size and the backup reserve.
- **Voltage margin:** the lowest pack voltage so far is 50.96 V against the 50.4 V disarm trigger and 48.8 V inverter cut-off.
- **Spread:** each shifted kWh earns about 189 UGX net (666.5 peak minus 429.7 off-peak at 90% round trip). A new quarterly tariff changes this directly.

Method

- **Shifted energy:** battery discharge (ess0/ActivePower > 0) integrated over the configured window, with 10 minutes added at the end for the inverter clock lag. It counts only when the grid is present, because discharge during an outage is backup, not arbitrage.
- **Saving:** shifted kWh at the peak rate, minus the off-peak cost of putting that energy back at 90% round-trip efficiency. It is energy only (no service charge, VAT or battery wear).

- **Recharge:** battery charging between 00:00 and 06:00. It includes refilling any evening outage use, so it can exceed the shifted energy.
- **Config history:** ADR-016 in the microgrid-gateway repo (v12 22:00-23:59, v13 off, v14 21:30-23:30 from 28 Sep).

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