Assessing a Commercial RPM lead

> How to decide whether a commercial facility is worth a Phase 1 proposal, and how to do a first-pass Phase 2 sizing and margin check from its utility bills. The results are screening estimates, not quotes. Worked example: Worship Harvest. Owner: Aaron Tushabe.

1. Ask the prospect for

- ☐ Utility bills for the last 12 months (at least 4), showing kWh by time-of-use period. UEDCL commercial bills split peak (18:00–24:00), shoulder and off-peak.
- ☐ An account statement or payment history for the same months
- ☐ Operating hours, including evenings, weekends and events
- ☐ Critical loads that must stay on in an outage, and how outages affect them today
- ☐ Generators: size, when they run, and monthly fuel and maintenance spend
- ☐ Roof or ground space for solar, and who owns the premises (a landlord would have to agree)
- ☐ Peak demand in kW or kVA, if they know it
- ☐ Who decides, and who signs

The website lists the same items under "Before you reach out", so many prospects will already have them.

2. Screen

Check	Pass	Worship Harvest
Monthly consumption	≥2 MWh/month (≥3 is stronger; 1.5–2 is marginal)	~6.9 MWh
Load shape	Most kWh in shoulder and peak periods, when solar and storage can serve them	81% shoulder + peak

Check	Pass	Worship Harvest
Payment record	Bills cleared within each billing cycle	Cleared every month, June–August
Site	Space for the solar; ownership of the premises clear	Owns its premises
Extra value	Generators run for reliability (diesel the RPM can replace)	200 kVA generator all day on Sundays

A facility that uses most of its electricity at night is a weaker fit even at high volumes, because solar can only reach that load through a much bigger battery.

3. Read the load from the bills

1. For each bill, note peak, shoulder and off-peak kWh. Average them to a typical month and work out each period's share.
2. **Weighted tariff** = (peak kWh × peak rate + shoulder kWh × shoulder rate + off-peak kWh × off-peak rate) ÷ total kWh
3. **NFE energy revenue at tariff parity** = the same sum per month, before VAT
4. If recent bills or payments are rising, run a second case at the recent level.

Code 10.2 rates used so far (Q3 2026, before VAT): peak UGX 666.5/kWh, shoulder 562.1, off-peak 429.7. ERA reviews tariffs every quarter, so check the current schedule before each proposal.

4. First-pass Phase 2 sizing

Evening energy (E) = peak-period kWh per month ÷ 30. This is what the battery must cover for six hours from 18:00.

Battery, nominal kWh = E × 1.15 ÷ (0.90 × 0.95) ≈ E × 1.35 (15% reliability reserve, 90% usable depth of discharge, 95% inverter efficiency)

Inverter, kW. Bills show energy, not instantaneous demand. Allow generous headroom over the average evening load (E ÷ 6 hours), check against large motor loads and the size of any generator, and confirm the real peak kW in Phase 1 before buying.

Solar, kWp. Enough to charge the battery for the evening peak and serve daytime load directly, without counting on export. Estimate output at 1,500 kWh per kWp per year (conservative for Uganda).

- Solar needed to supply the peak through the battery ≈ annual peak kWh ÷ 0.90 (round-trip efficiency)

- The rest of the solar output offsets shoulder kWh directly, up to the facility's shoulder consumption
- Solar beyond what peak + shoulder demand can absorb needs export arrangements or load growth

5. Check the margin

1. **Avoided grid purchases** per year = (peak kWh supplied from the battery × peak rate) + (solar kWh used directly × shoulder rate)
2. **Cash flow (CFADS)** = avoided grid purchases − routine O&M (~1.5% of CAPEX) − NFE monitoring, billing and admin (UGX 1.2m per site) − battery and inverter replacement reserve (~5% of CAPEX in the Worship Harvest case)
3. **RPM margin per kWh** = CFADS ÷ the customer's annual kWh
4. **Capital recovery needed** per year = CAPEX × r ÷ (1 − (1 + r)^−n). At NFE's 15% target over 15 years the factor is 0.171. CFADS should at least match it, with room to spare.

In Sep 2026, a 120 kWh / 50 kW / 36–40 kWp system cost an estimated UGX 120–145m on budget-brand retail prices. Benchmarks and caveats: Commercial RPM economics and bankability.

6. Add the customer's side of the case

The customer pays the same per kWh, so its savings come from what the RPM removes: diesel and generator maintenance, generator rentals for events, UPS and backup equipment, staff time spent managing backup, and outage losses. None of this is NFE revenue, but it often decides the sale. Worship Harvest spends about UGX 900,000 on diesel every Sunday (UGX 46.8m a year).

7. Decide and propose

- If the lead passes the screen and the margin covers capital recovery with room to spare, propose Phase 1 on the current terms.
- Phase 1: submeter after the grid/generator changeover at 15-minute intervals or finer for about 3 months, covering normal days, evenings, weekends, events and generator periods. Then redesign Phase 2 from the measured data.
- Present system sizes and CAPEX as indicative until Phase 1 and EPC quotes are done.

Worship Harvest in numbers

Step	Result
Average month	6,912 kWh: 2,017 peak / 3,565 shoulder / 1,330 off-peak (29% / 52% / 19%)
Weighted tariff	UGX 567.1/kWh, so revenue of UGX 3.92m/month (UGX 47.0m/year) before VAT
Evening energy	67 kWh a night on average; 88 kWh at the August run-rate
Battery	88 × 1.35 ≈ 118 → **120 kWh** (about 103 kWh usable, or ~17 kW for 6 hours)
Inverter	**50 kW** three-phase, for headroom over an average evening load of 11–15 kW. The 200 kVA generator means Phase 1 must confirm this.
Solar	The first model needed ≥32 kWp for a 15% return; with the full replacement reserve, **40 kWp** gives ~15%. Around 46 kWp, solar covers all peak + shoulder demand.
Avoided grid purchases (40 kWp)	24,207 kWh of peak via the battery + ~33,100 kWh directly against shoulder ≈ **UGX 34.8m/year**
CFADS	34.77 − 2.14 O&M − 1.20 admin − 6.91 replacement reserve = **UGX 24.5m/year** (~UGX 296 per kWh sold)
Capital recovery at 15% over 15 years	UGX 140–143m × 0.171 ≈ UGX 24.0–24.4m/year, so a project return of about 15%

Limits of this method

- It uses monthly and annual averages. Real use varies from day to day, so less solar is used on cloudy or quiet days. Move to an hourly model once Phase 1 data exists.
- The ≥2 MWh/month threshold came from a lighter version of this calculation (smaller replacement reserve). Treat it as a screen, not a guarantee of profitability.
- Utility bills don't show generator-supplied consumption, such as Worship Harvest's Sundays.

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