

**Voltek Energy**

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# **Solar ATAP Intelligence Dossier**

Mega Plastics Industries Sdn Bhd

Shah Alam, Selangor (Seksyen 26)

Independent Roof & Energy Feasibility Analysis

**CONFIDENTIAL**

February 2026

# Executive Snapshot

|                      |                           |
|----------------------|---------------------------|
| Recommended Size     | 280 kWp                   |
| Annual Savings Range | RM 108,181 – RM 126,381   |
| Payback Range        | 4.5 – 5.3 years           |
| Export Exposure      | 20%                       |
| Forfeiture Risk      | Low (RM 1,400 – 2,700/yr) |
| ATAP Eligibility     | PASS                      |

-  Technical Fit
-  Financial Viability
-  SMP Sensitivity
-  Policy Compliance

# Facility Intelligence Overview

|                          |   |
|--------------------------|---|
| Industry                 | Plastics Manufacturing  |
| Operation Pattern        | Day-dominant (7am–6pm)  |
| Tariff Type              | Non-domestic (C1/C2 tariff)                                       |
| Estimated Maximum Demand | 350 kW  |
| Decision Maker           | En. Ahmad Razak, Director — confirmed owner, direct line verified |

## Solar Fit Score: 84/100 (Tier A)

| Component                  | Score | Max | Weight |
|----------------------------|-------|-----|--------|
| ATAP Regulatory Compliance | 27    | 30  | 30%    |
| Operational Suitability    | 17    | 20  | 20%    |
| Asset Control (Ownership)  | 20    | 20  | 20%    |
| Decision-Maker Access      | 13    | 15  | 15%    |
| Trigger Signals            | 7     | 15  | 15%    |
| TOTAL                      | 84    | 100 | 100%   |

# Roof Intelligence Analysis

Using satellite analysis and site geometry estimation, the facility provides approximately 16,800 sqft of usable roof area suitable for PV installation.

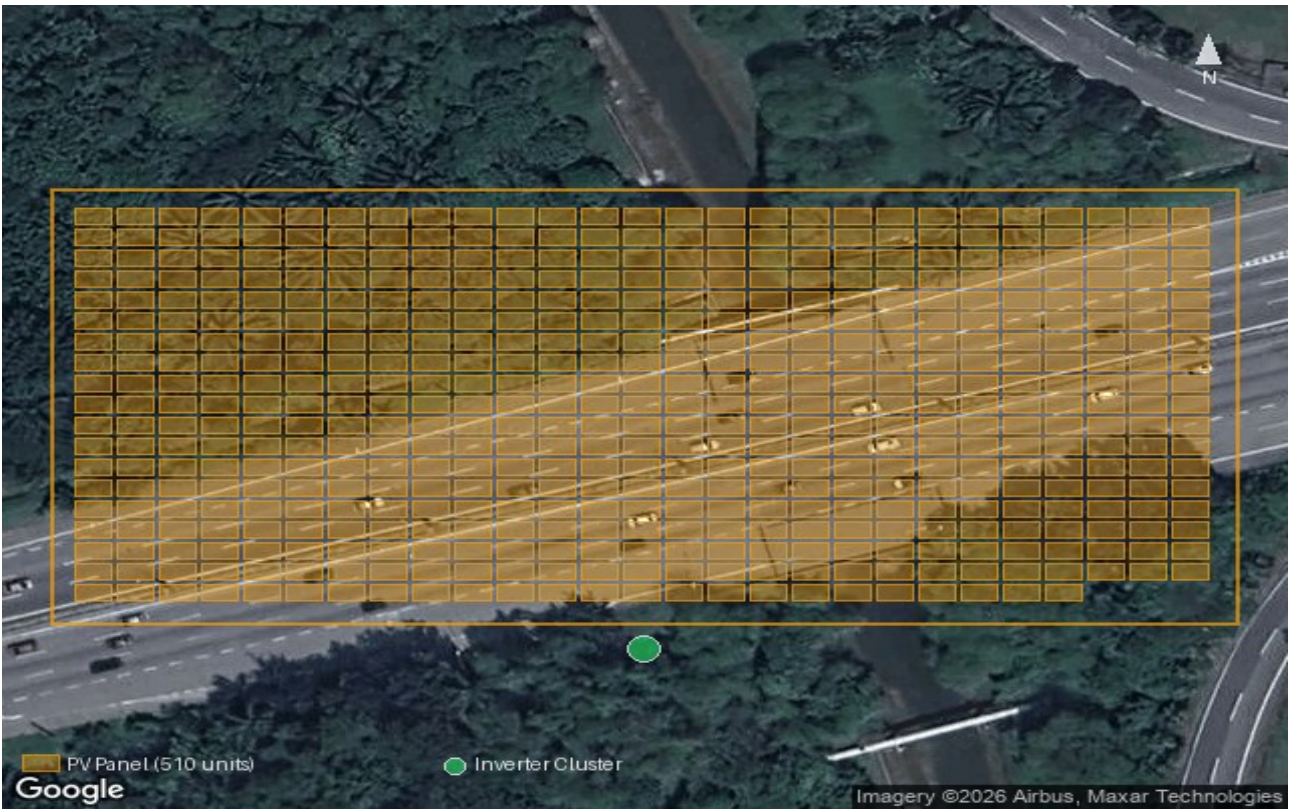


Source: Google Static Maps API · Satellite imagery for reference only · Subject to site verification

| Parameter                      | Value  |
|--------------------------------|--|
| Estimated total roof footprint | ~18,480 sqft                                   |
| Usable after obstructions      | 16,800 sqft                                    |
| Roof type (estimated)          | Metal deck (industrial profile)                |
| Structural risk level          | Low–Moderate (to verify on site)               |
| Tilt assumption                | 5–10° metal deck pitch                         |
| Orientation                    | North–South alignment (optimal for equatorial) |

# Preliminary Layout Concept

The conceptual layout illustrates optimal panel alignment oriented to maximise daytime generation while maintaining safe maintenance corridors and inverter clustering efficiency.



Conceptual layout: ~510 x 550W panels · Amber = panel zones · Green = inverter cluster · Subject to site verification

|                  |  |
|------------------|--|
| Panel count      | ~510 x 550W panels                       |
| Row spacing      | 1.0m maintenance corridor                |
| Inverter cluster | Central location (minimise DC cable run) |
| AC routing       | To main switchboard (shortest path)      |

This layout is indicative and subject to physical survey validation. Final design will account for roof penetrations, drainage paths, and structural load limits.

# ATAP Eligibility Assessment

Based on GP/ST/No.60/2025 (Solar ATAP Guidelines effective January 2026).

| Criteria  | Status | Detail  |
|---|--------|---|
| Single-tenant premise   | PASS   | Single occupant — owner-operated factory          |
| Maximum Demand < 1MW  | PASS   | Estimated MD: 350 kW (within cap)                 |
| Ownership / TNB consent   | PASS   | Owner-occupied (no landlord consent needed)       |
| Operating hours   | NOTE   | Day-dominant (7am-6pm) — optimal self-consumption |
| Sector eligibility  | PASS   | Manufacturing — no ATAP sector exclusion          |
| VERDICT: ATAP ELIGIBLE — All hard gates passed. Proceed to system sizing. |        |   |

# Sizing Strategy & Oversizing Risk

Solar ATAP mandates system capacity at or below 100% of Maximum Demand, capped at 1MW. To minimise monthly energy forfeiture (no credit carry-forward under ATAP), optimal sizing targets 75-85% of MD for day-dominant operations.

| Parameter                    | Value              | Basis  |
|------------------------------|--------------------|--|
| Estimated Maximum Demand     | 350 kW             | TNB bill band + sector benchmark                                 |
| ATAP capacity cap            | 350 kW (MD) or 1MW | Whichever is lower = 350 kW                                      |
| Optimal sizing range         | 262 – 297 kWp      | 75-85% of 350 kW MD  |
| Recommended system size      | 280 kWp            | Sweet spot for self-consumption                                  |
| Estimated annual generation  | 364,000 kWh        | 280 kWp x 1,300 kWh/kWp (3.57 peak sun hours/day, Selangor avg p |
| Estimated roof area required | 16,800 sqft        | 280 kWp x ~60 sqft/kWp   |

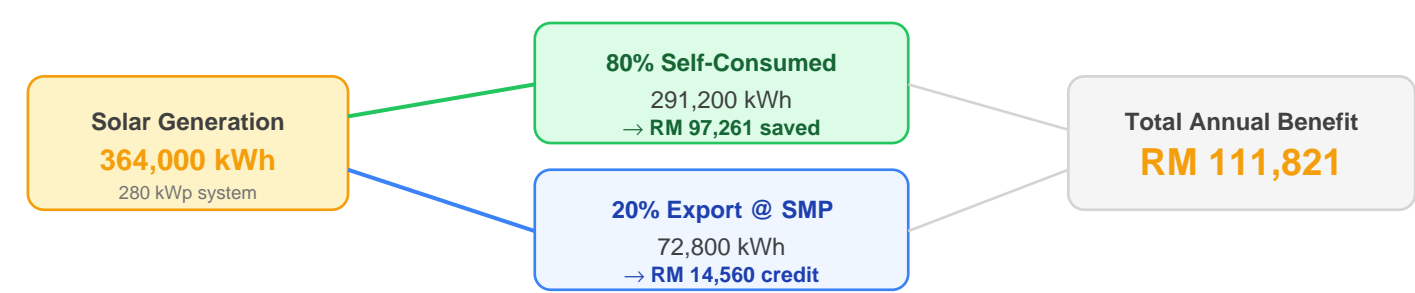
## Sizing Comparison

| Size                  | Self-Use % | Export % | Annual Export | Value Loss vs Optimal |
|-----------------------|------------|----------|---------------|-----------------------|
| 280 kWp (recommended) | 80%        | 20%      | 72,800 kWh    | —                     |
| 350 kWp (roof-max)    | 80%        | 20%      | 91,000 kWh    | ~RM 15,000/yr         |

OVERSIZING WARNING: A roof-maximized 350 kWp system (100% of MD) would generate an estimated 455,000 kWh/year. At 80% self-consumption, approximately 91,000 kWh of excess export would be settled at SMP (~RM 0.20/kWh) rather than displacing TNB tariff (~RM 0.365/kWh) — a net value loss of ~RM 15,000/year. Under ATAP's no-rollover rule, months with low factory load would also risk outright forfeiture.

# Energy Flow Analysis

At 80% self-consumption, the majority of generated energy displaces TNB tariff directly, with controlled export exposure settled at SMP rates.



ROI stability is primarily driven by tariff displacement rather than export dependency.

## Financial Projection

### CAPEX Estimate

| Component                  | Rate                      | Amount               |
|----------------------------|---------------------------|----------------------|
| Solar PV system (280 kWp)  | RM 1,800–2,200/kWp        | RM 504,000 – 616,000 |
| CAS fee (>180-425 kW band) | GP/ST/No.60/2025 schedule | RM 5,000             |
| Structural roof assessment | Subject to roof condition | RM 3,000 – 8,000     |
| Total estimated CAPEX      |                           | RM 512,000 – 629,000 |

Savings model uses midpoint CAPEX of RM 570,000 for payback calculation.

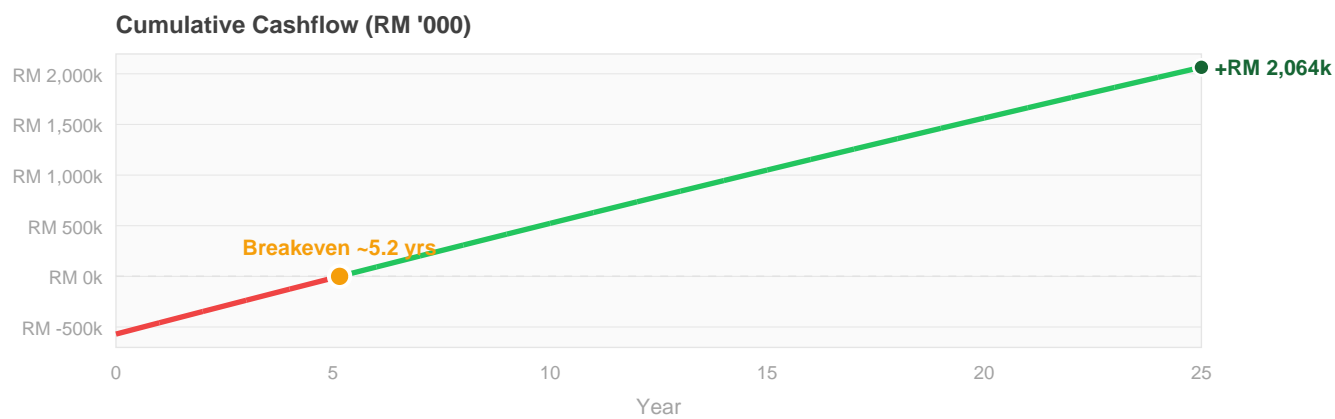
### Savings Model (Annual)

| Scenario           | Self-Consumed | Export      | Annual Savings | Payback |
|--------------------|---------------|-------------|----------------|---------|
| Conservative (70%) | 254,799 kWh   | 109,201 kWh | RM 106,943     | 5.3 yrs |
| Base case (80%)    | 291,200 kWh   | 72,800 kWh  | RM 111,821     | 5.1 yrs |
| Optimistic (90%)   | 327,600 kWh   | 36,400 kWh  | RM 116,698     | 4.9 yrs |

Payback range across full CAPEX band: 4.6 – 5.6 years (base case RM 111,821/yr against RM 512,000 – 629,000).



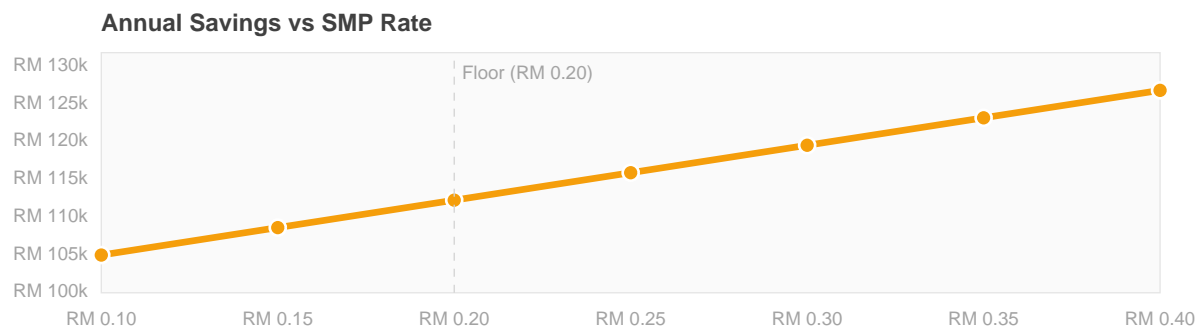
# 25-Year Cumulative Cashflow



Over 25 years with 0.5% annual degradation, cumulative net benefit reaches approximately RM 2,064k after midpoint CAPEX recovery.

# SMP Sensitivity Analysis

The System Marginal Price fluctuates monthly based on fuel costs and dispatch order.



| SMP Rate            | Export Revenue | Total Savings | Payback | Impact vs Floor |
|---------------------|----------------|---------------|---------|-----------------|
| RM 0.15/kWh         | RM 10,920      | RM 108,181    | 5.3 yrs | -RM 3,640       |
| RM 0.20/kWh (floor) | RM 14,560      | RM 111,821    | 5.1 yrs | Base            |
| RM 0.25/kWh         | RM 18,200      | RM 115,461    | 4.9 yrs | +RM 3,640       |
| RM 0.30/kWh         | RM 21,840      | RM 119,101    | 4.8 yrs | +RM 7,280       |
| RM 0.40/kWh (peak)  | RM 29,120      | RM 126,381    | 4.5 yrs | +RM 14,560      |

**KEY INSIGHT:** At 80% self-consumption, the full SMP range (RM 0.15-0.40) causes only a RM 18,200 swing — ~16% variance. The primary savings driver is self-consumed generation displacing TNB tariff, not export credits.

NOTE: Monthly Average SMP is published by Single Buyer ([www.singlebuyer.com.my/resources-marginal.php](http://www.singlebuyer.com.my/resources-marginal.php)) under the Malaysian MESI framework. The RM 0.20/kWh floor is a conservative estimate. Final economics should use the actual published SMP figure at time of proposal.

## Monthly Forfeiture Risk Assessment

Under Solar ATAP, excess credits are forfeited at end of each billing month. Cost estimates assume excess generation exported at SMP rather than self-consumed at tariff.

| Risk Factor                    | Prob.  | Est. Annual Cost | Mitigation                                       |
|--------------------------------|--------|------------------|--|
| Hari Raya shutdown (1-2 weeks) | High   | RM 1,000 – 2,000 | Factor into annual model; accept ~2% forfeiture  |
| CNY factory closure (3-5 days) | Medium | RM 400 – 700     | Short closure; minimal impact at 280 kWp         |
| Weekend generation excess      | Low    | Negligible       | Day-dominant ops; sizing accounts for 5-day week |
| Unplanned downtime             | Low    | Negligible       | 280 kWp at 80% MD provides buffer                |

Total estimated annual forfeiture cost: RM 1,400 – 2,700 (0.4–0.7% of gross generation value).

# Carbon & ESG Impact

Based on 364,000 kWh annual generation displacing grid electricity with Malaysian grid emission factor of ~0.7 kg CO2/kWh:

| Metric                                 | Annual Impact      |
|--|--------------------|
| CO2 emissions avoided                  | ~255 tonnes/year   |
| Equivalent: vehicles removed from road | ~55 passenger cars |
| Equivalent: trees planted              | ~4,000 trees       |
| 25-year lifetime CO2 avoidance         | ~5,992 tonnes      |

This carbon reduction supports alignment with Bursa Malaysia Sustainability Reporting Framework and corporate ESG disclosure requirements. Solar ATAP installations provide verifiable renewable energy generation for annual sustainability reporting.

# Implementation Roadmap

| Phase               | Duration  | Description   |
|---------------------|-----------|---|
| 1. Site Survey      | 2–3 weeks | Physical roof inspection, structural load assessment, TNB meter verification.           |
| 2. Detailed Design  | 2–3 weeks | Panel layout, inverter sizing, cable routing, single-line diagram.                      |
| 3. ATAP Application | 4–8 weeks | Submit to TNB with CAS approval. Capacity subject to Government availability. First-con |
| 4. Installation     | 6–8 weeks | Panel mounting, inverter installation, wiring for 280 kWp system.                       |
| 5. Commissioning    | 1–2 weeks | TNB inspection, meter installation, COD issuance.                                       |

**Estimated total timeline: 4–6 months from survey to commissioning.**

# Strategic Recommendation

Based on financial modelling, roof intelligence, and policy compliance review, this facility demonstrates **high suitability** for a 280 kWp ATAP-compliant installation with controlled export exposure and strong self-consumption economics.

We recommend proceeding to:

- Physical survey and structural validation
- Detailed load profile analysis (TNB bill data)
- Structural assessment by certified engineer
- ATAP application to secure capacity allocation

**This dossier is designed to eliminate oversizing risk, quantify export volatility exposure, protect against policy misinterpretation, and provide board-ready financial clarity.**

**The assessment fee is deductible upon project award.**

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DISCLAIMER: This report is based on estimated data and publicly available benchmarks. Actual system sizing, generation, and financial returns depend on site-specific conditions confirmed during physical survey. TNB tariff uses a blended effective rate; actual bill structure varies by consumption pattern. SMP export rates are conservative estimates — actual rates published monthly by Single Buyer ([www.singlebuyer.com.my](http://www.singlebuyer.com.my)). Solar irradiance data sourced from PVGIS/SolarGIS; actual yield may vary. CAPEX range reflects market variation and does not constitute a quotation. This report does not constitute financial advice. All figures should be validated by the installing EPC contractor.

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