

**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

# Report Methodology

This report is produced by an independent solar acquisition intelligence engine. It is not an EPC sales proposal. The methodology is designed to protect the building owner from common industry pitfalls.

## How this differs from a conventional EPC quote:

Dimension	Voltek Energy Intelligence Dossier	Typical EPC Quote
Sizing logic	75–85% of MD to minimise forfeiture	Roof-max to maximise equipment sale
Export modelling	SMP sensitivity across full range (RM 0.15–0.40)	Often omitted or assumed favourable
Forfeiture risk	Monthly forfeiture quantified (Hari Raya, CNY, weekends)	Rarely discussed
ATAP compliance	Hard gate validation before sizing	Assumed or deferred to application
Financial bias	No equipment markup — independent assessment	Bundled with equipment pricing
Oversizing warning	Quantified value loss at roof-max vs optimised size	Not disclosed — larger system = higher margin

**This methodology ensures the building owner receives decision-grade intelligence before committing to any EPC contractor. The assessment fee is deductible upon project award — aligning incentives with the owner, not the installer.**

# Facility Intelligence Overview

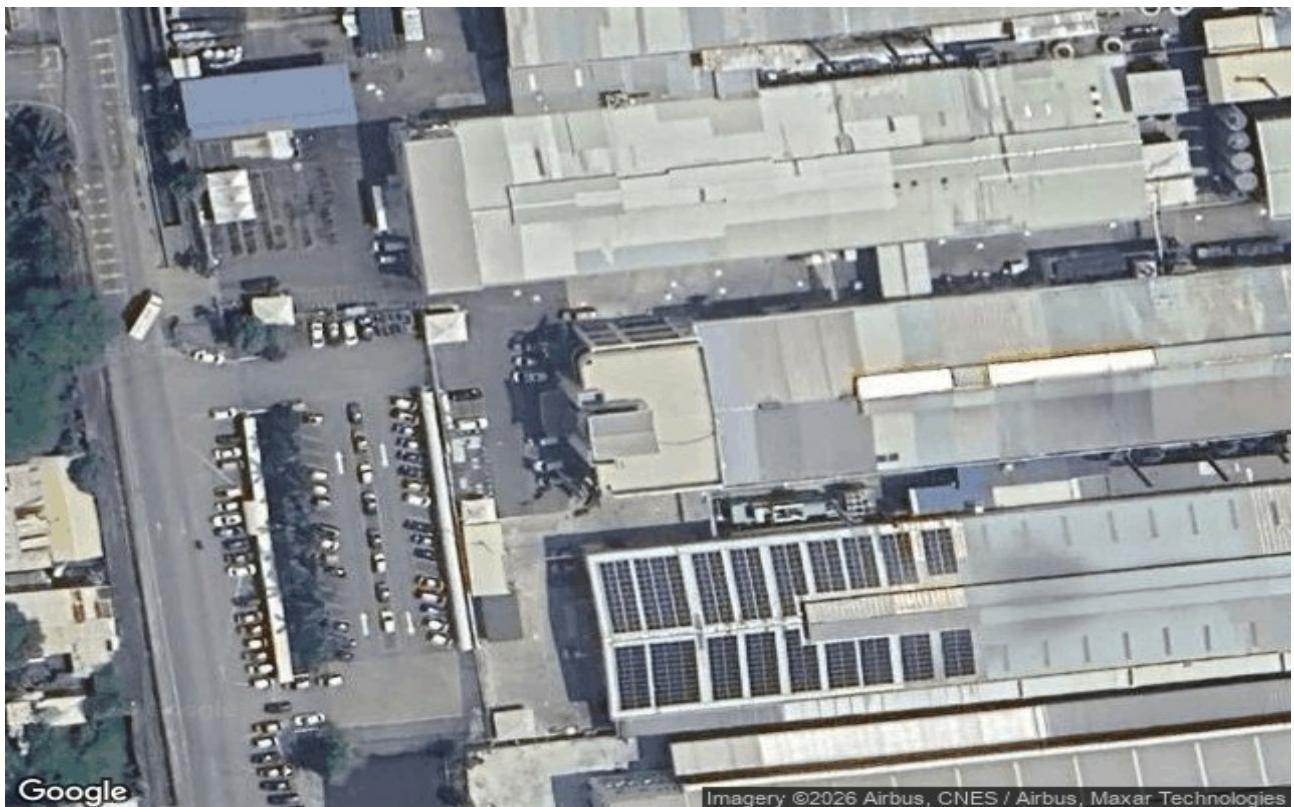
Industry	Plastics Manufacturing
Operation Pattern	Day-dominant (7am–6pm)
Tariff Type	Non-domestic (C1/C2 tariff)
Estimated Maximum Demand	350 kW
Decision Maker	En. Ahmad Razak, Director — confirmed owner, direct line verified

**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%
<b>TOTAL</b>	<b>84</b>	<b>100</b>	<b>100%</b>

# 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.

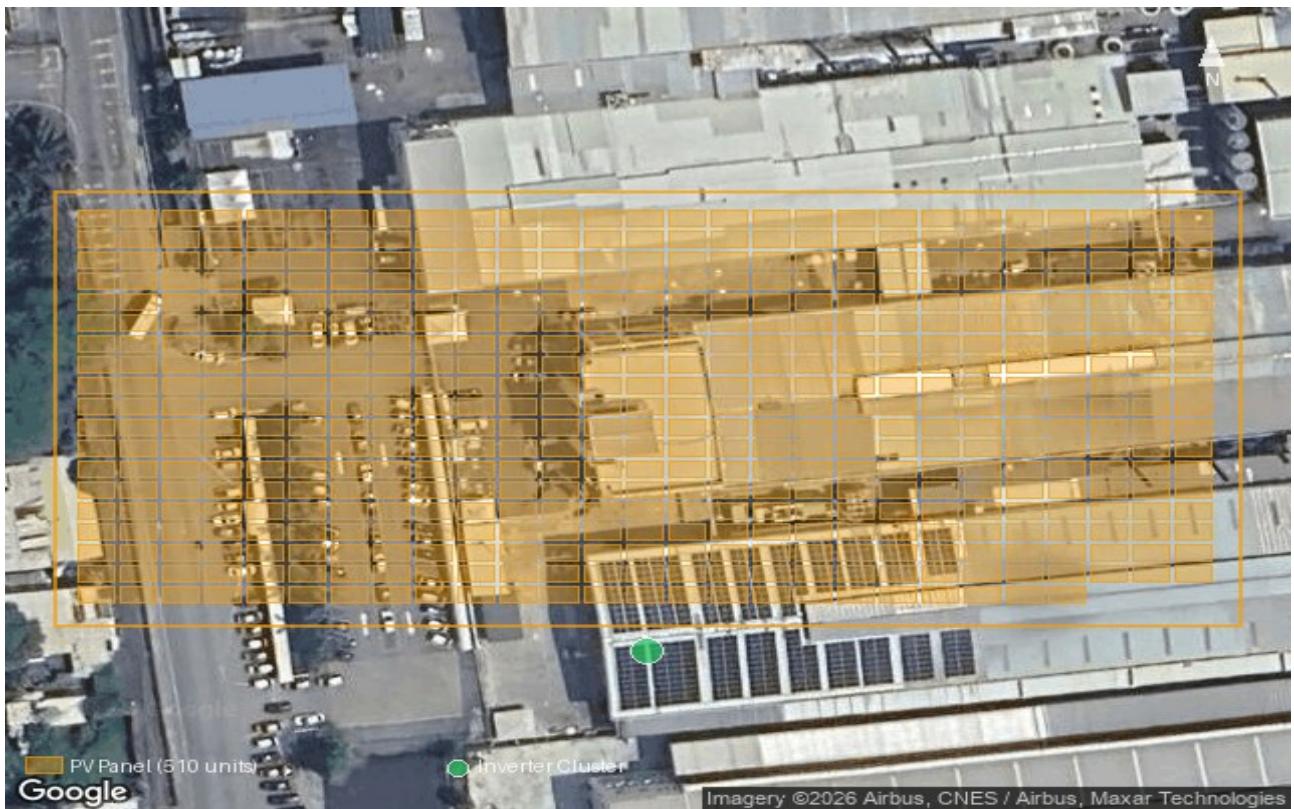


Source: Google Static Maps API · Satellite imagery for reference only · Subject to site verification

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

<b>Panel count</b>	~510 x 550W panels
<b>Row spacing</b>	1.0m maintenance corridor
<b>Inverter cluster</b>	Central location (minimise DC cable run)
<b>AC routing</b>	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	<b>PASS</b>	Single occupant — owner-operated factory
Maximum Demand < 1MW	<b>PASS</b>	Estimated MD: 350 kW (within cap)
Ownership / TNB consent	<b>PASS</b>	Owner-occupied (no landlord consent needed)
Operating hours	<b>NOTE</b>	Day-dominant (7am-6pm) — optimal self-consumption
Sector eligibility	<b>PASS</b>	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	<b>280 kWp</b>	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

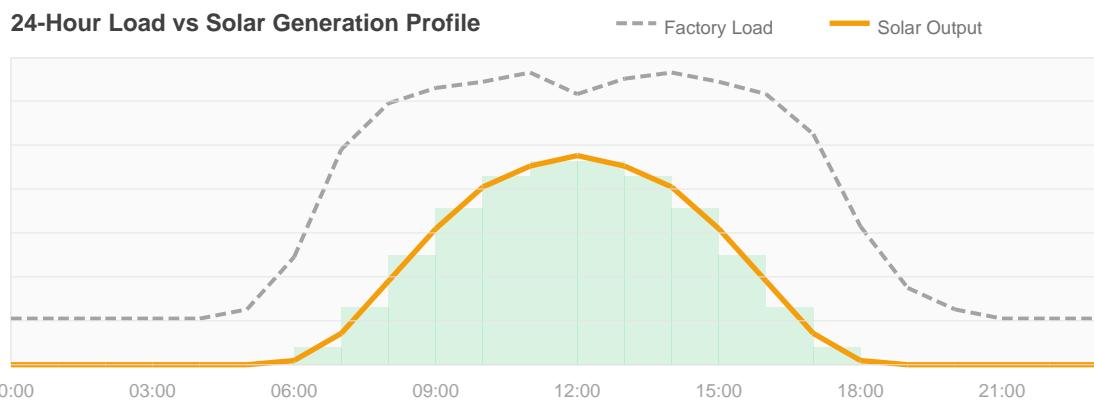
At 80% self-consumption, the majority of generated energy displaces TNB tariff directly, with controlled export exposure settled at SMP rates.



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

## Load Profile Analysis

Day-dominant operations (7am-6pm) align well with solar generation. The 280 kWp system is sized to maximise overlap between generation output and factory consumption, minimising export dependence.



**KEY INSIGHT:** At current operating hours, approximately 100% of solar output is absorbed directly by factory load (green zone). The remaining 0% is exported at SMP rates (amber zone). This confirms 80% self-consumption is a realistic, not optimistic, assumption.

# Financial Projection

## CAPEX Estimate

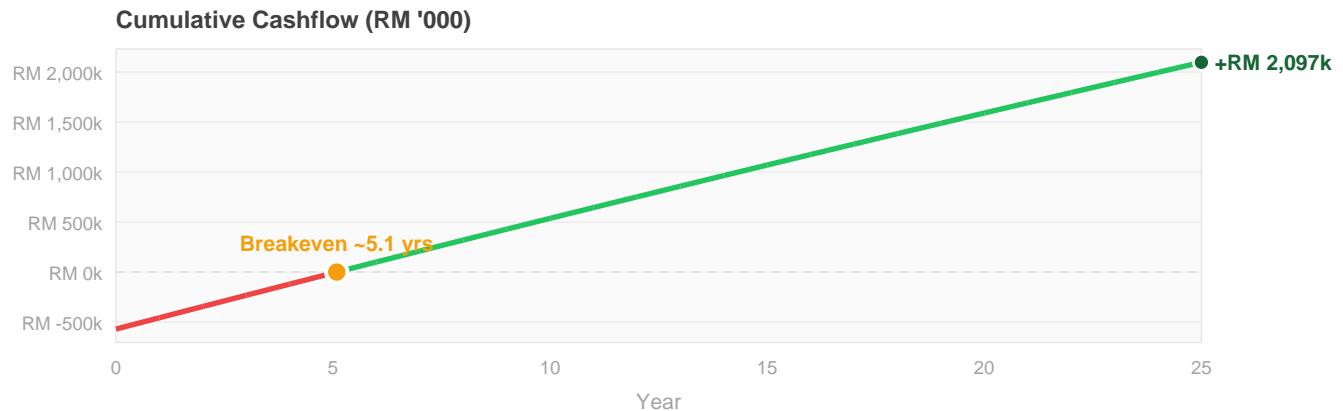
Component	Rate	Amount
Solar PV system (280 kWp)	RM 1,800–2,200/kWp	RM 504,000 – 616,000
CAS fee (>180-425 kW band)	GP/ST/No.60/2025 schedule	RM 5,000
Structural roof assessment	Subject to roof condition	RM 3,000 – 8,000
<b>Total estimated CAPEX</b>		<b>RM 512,000 – 629,000</b>

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 109,072	5.2 yrs
<b>Base case (80%)</b>	291,200 kWh	72,800 kWh	RM 113,240	5.0 yrs
Optimistic (90%)	327,600 kWh	36,400 kWh	RM 117,408	4.9 yrs
<b>Payback range across full CAPEX band: 4.5 – 5.6 years (base case RM 113,240/yr against RM 512,000 – 629,000).</b>				

## 25-Year Cumulative Cashflow



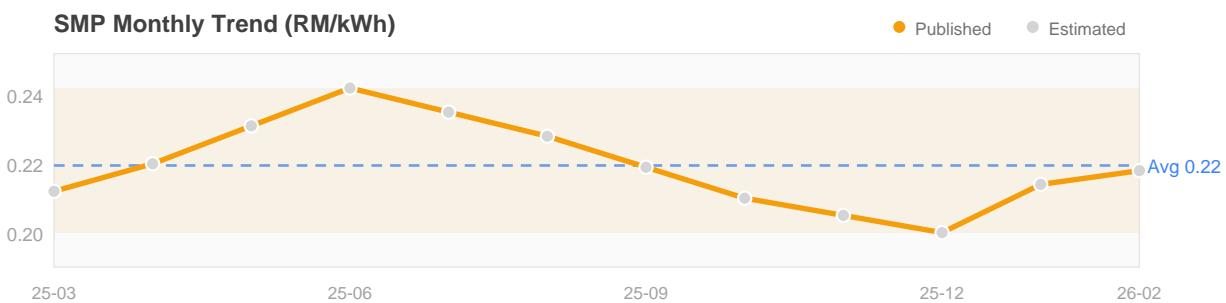
Over 25 years with 0.5% annual degradation, cumulative net benefit reaches approximately RM 2,097k after midpoint CAPEX recovery.

# SMP Exposure & Export Risk Envelope

The System Marginal Price (SMP) is the wholesale electricity clearing price, published monthly by Single Buyer Malaysia under the MESI framework. Export credits under Solar ATAP are settled at Average SMP (7am–7pm). Analysis below uses estimated market data — latest: RM 0.2180/kWh (2026-02).

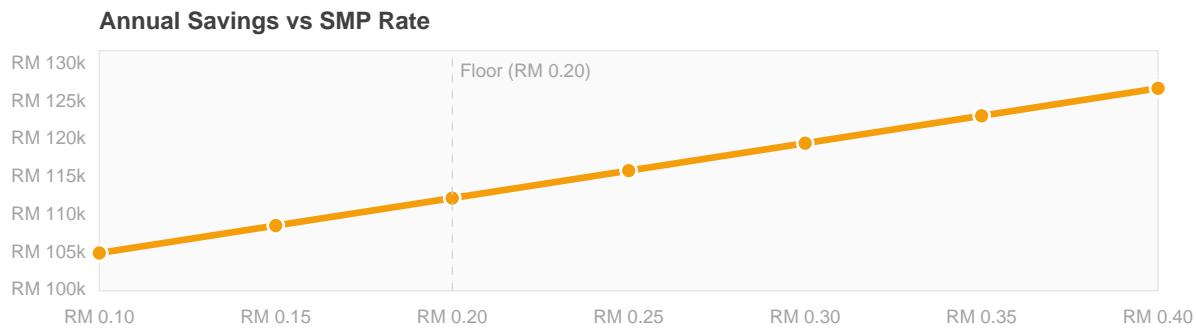
Metric	Value
Latest Monthly SMP	RM 0.2180/kWh (2026-02)
12-Month Average	RM 0.2195/kWh
12-Month Range	RM 0.2000 – 0.2420/kWh
Volatility (max-min)	RM 0.0420/kWh
Data Source	<a href="http://www.singlebuyer.com.my">www.singlebuyer.com.my</a>

## Monthly SMP Trend



## Export Revenue Sensitivity

SMP Rate	Export Revenue	Total Savings	Payback	vs. Base
RM 0.17	RM 12,376	RM 109,637	5.2 yrs	RM -3,640
<b>RM 0.22 (12M avg)</b>	RM 16,016	RM 113,277	5.0 yrs	Base
RM 0.27	RM 19,656	RM 116,917	4.9 yrs	+RM 3,640
RM 0.32	RM 23,296	RM 120,557	4.7 yrs	+RM 7,280
RM 0.40	RM 29,120	RM 126,381	4.5 yrs	+RM 13,104



## Export Exposure Impact

**EXPORT RISK ENVELOPE:** At 80% self-consumption, only 20% of generation (72,800 kWh) is exposed to SMP volatility. The 12-month observed range (RM 0.20–0.24) causes a maximum swing of RM 3,058/year — just 2.7% of total annual savings. Self-consumed generation displacing TNB tariff at RM 0.334/kWh drives 80% of the economics.

**PAYBACK RESILIENCE:** Across the full 12-month SMP range, payback varies by only 0.1 years (5.1–5.0 yrs). This confirms the investment case is robust against wholesale price fluctuation.

NOTE: SMP data sourced from Single Buyer Malaysia ([www.singlebuyer.com.my/resources-marginal.php](http://www.singlebuyer.com.my/resources-marginal.php)). Values shown are estimates pending official confirmation. Final proposal economics will use the published SMP figure for the month of proposal issuance.

## 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	<b>-255 tonnes/year</b>
Equivalent: vehicles removed from road	<b>-55 passenger cars</b>
Equivalent: trees planted	<b>-4,000 trees</b>
25-year lifetime CO2 avoidance	<b>-5,992 tonnes</b>

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-comer basis.
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.