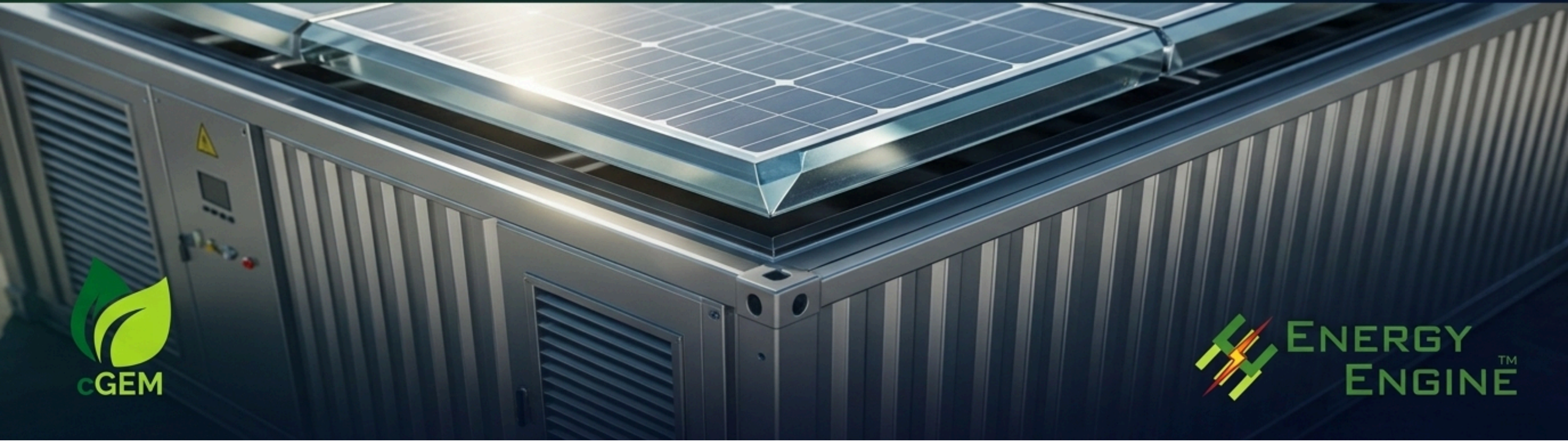
Nagpur 200MW Solar & 400MWH BESS Hybrid Project
Executive Feasibility & Financial Assessment

Clean Green Energy Mission



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Project Viability Dashboard

Scale & Asset

200MW AC Solar
+ 537MWh BESS Capacity

Capital Efficiency

11.85B INR
Total Project Cost

59,250 INR/kW installed

Cost Advantage

2.78 INR/kWh
Levelised Cost of Generation (LCOG)

ESG Economics

466,132 tons CO_2e
Annual reduction yielding new revenue streams

The Physical Reality: Kalameshwar, Nagpur

Elevation:

Elevation: 315m MSL

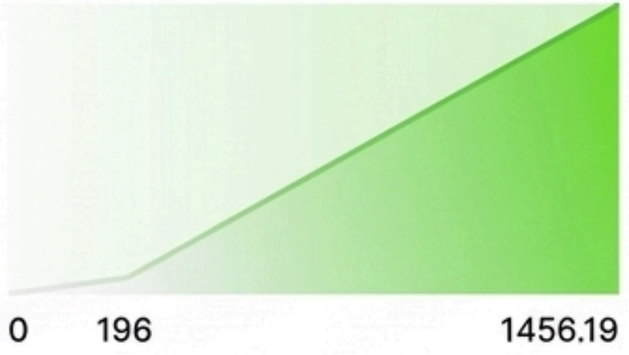
Mean Temp:

Mean Temp: 24.96°C (Max 45.39°C)

Irradiance

Average GHI: 196.08 W/m²

Maximum GHI: 1456.19 W/m²



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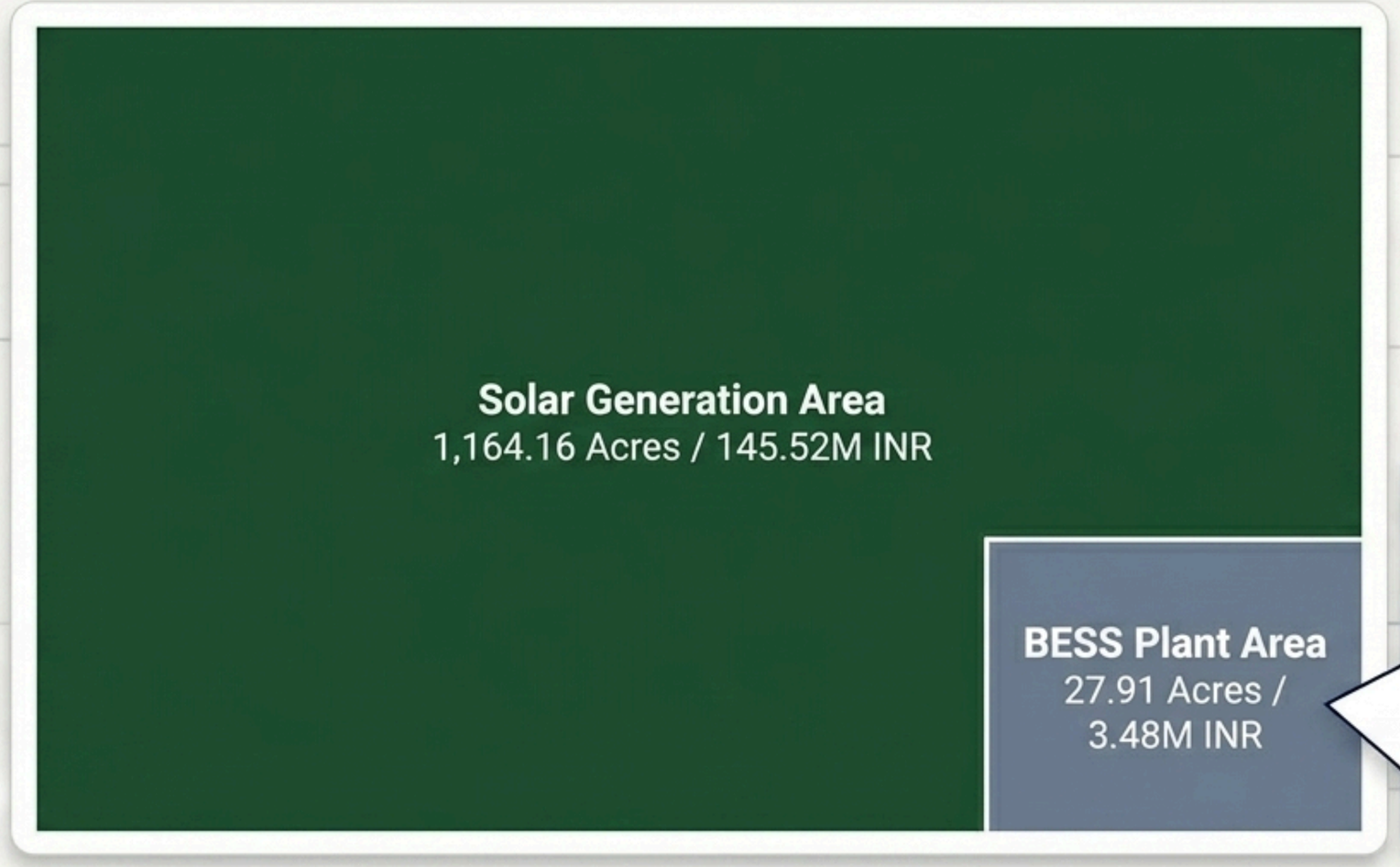
Spatial Footprint and Land Optimization

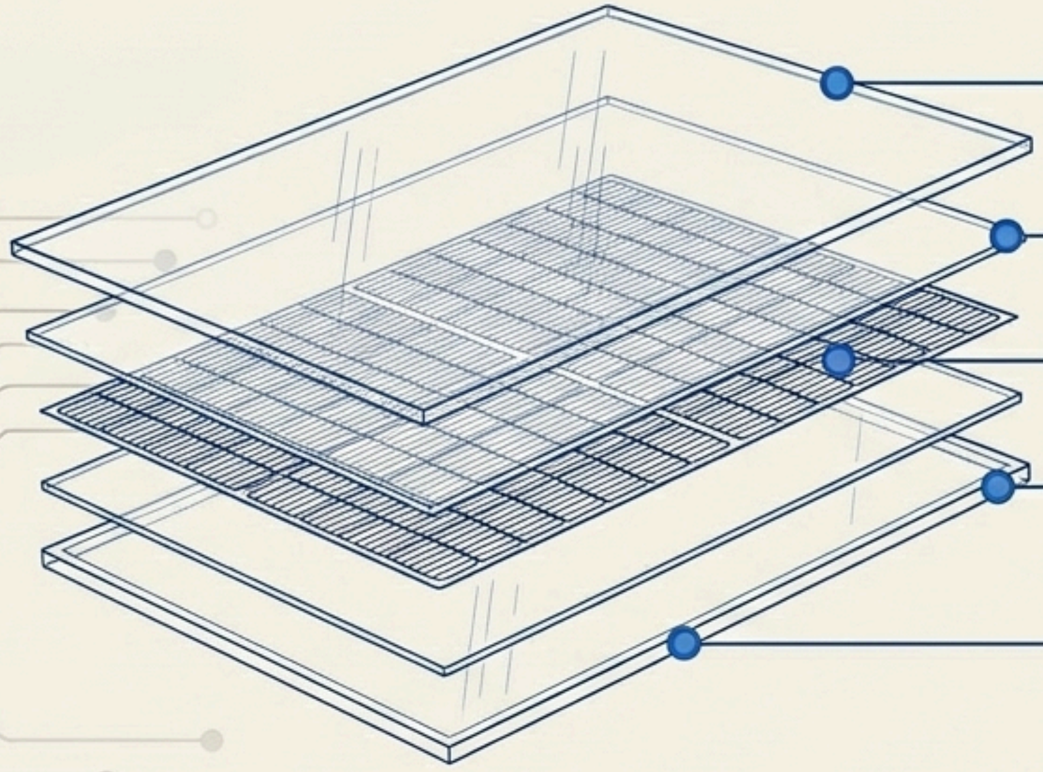


BESS Footprint Efficiency

- 67,222 sq.m : Battery blocks
- 5,377 sq.m : Inverters & transformers
- 8,066 sq.m : Power conversion

Key Takeaway: Total Project Land Cost secured at 149.00 Million INR.

Primary Generation Engine: Solar PV Core



ASPL-580W-182MP/144TB
Bifacial N-Type TOPCon

Capacity: 580W STC Power

Efficiency: 22.44%

Bifacial Gain: 10% (Albedo 0.2)

Degradation defense:
Temp Coefficient -0.29 %/°C

Total Modules

584,111

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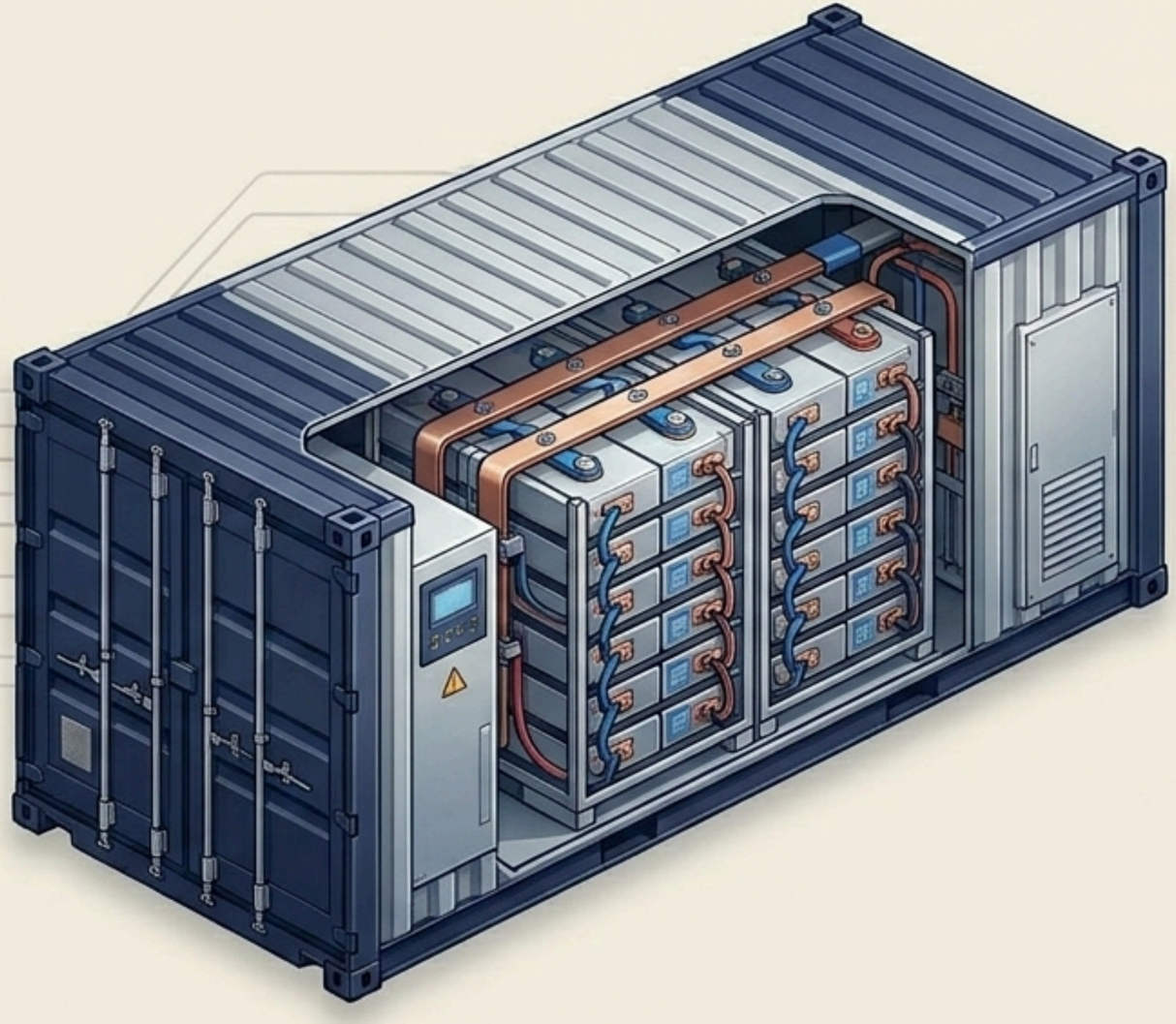
Capacity

282.32 MW DC / 200MW AC

Gross Annual Generation

552.30 MKWH

Load Shifting Architecture: BESS Infrastructure



Capacity:
100MW Load /
537,778 KWH

Performance:
4 Autonomy Hours
at 90% Depth of
Discharge

Efficiency:
90% Round Trip

Lifecycle: 11-year
replacement life
(End-of-life SOH
threshold 80%)

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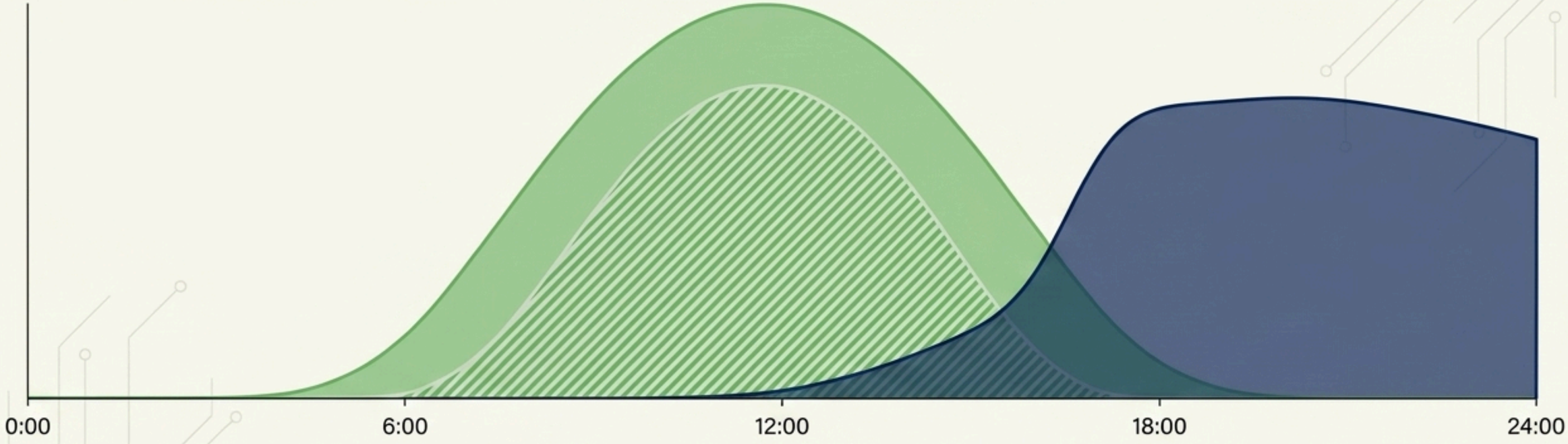
System Diagnostic: Solar vs. BESS Integration

Solar PV System		Battery Energy Storage	
Capacity Share	**282MW DC**	Capacity Share	**100MW / 537MWh**
CAPEX Share	**64.6%** (7.39B INR)	CAPEX Share	**31.3%** (3.58B INR)
Footprint Share	**97.6%** (1164 acres)	Footprint Share	**2.4%** (28 acres)
Auxiliary Losses	**1%** (5.52 MKWH)	Auxiliary Losses	**2%** (15.34 MKWH)
CUF Contribution	**22.05%**	CUF Contribution	**14.56%**

Unified Net CUF: 29.66%

Evening Peak Shifting Mechanics



Generate during peak irradiance (**546.78 MKWH** net)

Store via 90% efficient LFP batteries

Export **521.01 MKWH** net during evening peak demand

The ESG Dividend: Lifecycle Emissions Reduction

Project Lifecycle Intensity

0.056 kg CO_2e/kWh

Grid Baseline Emissions

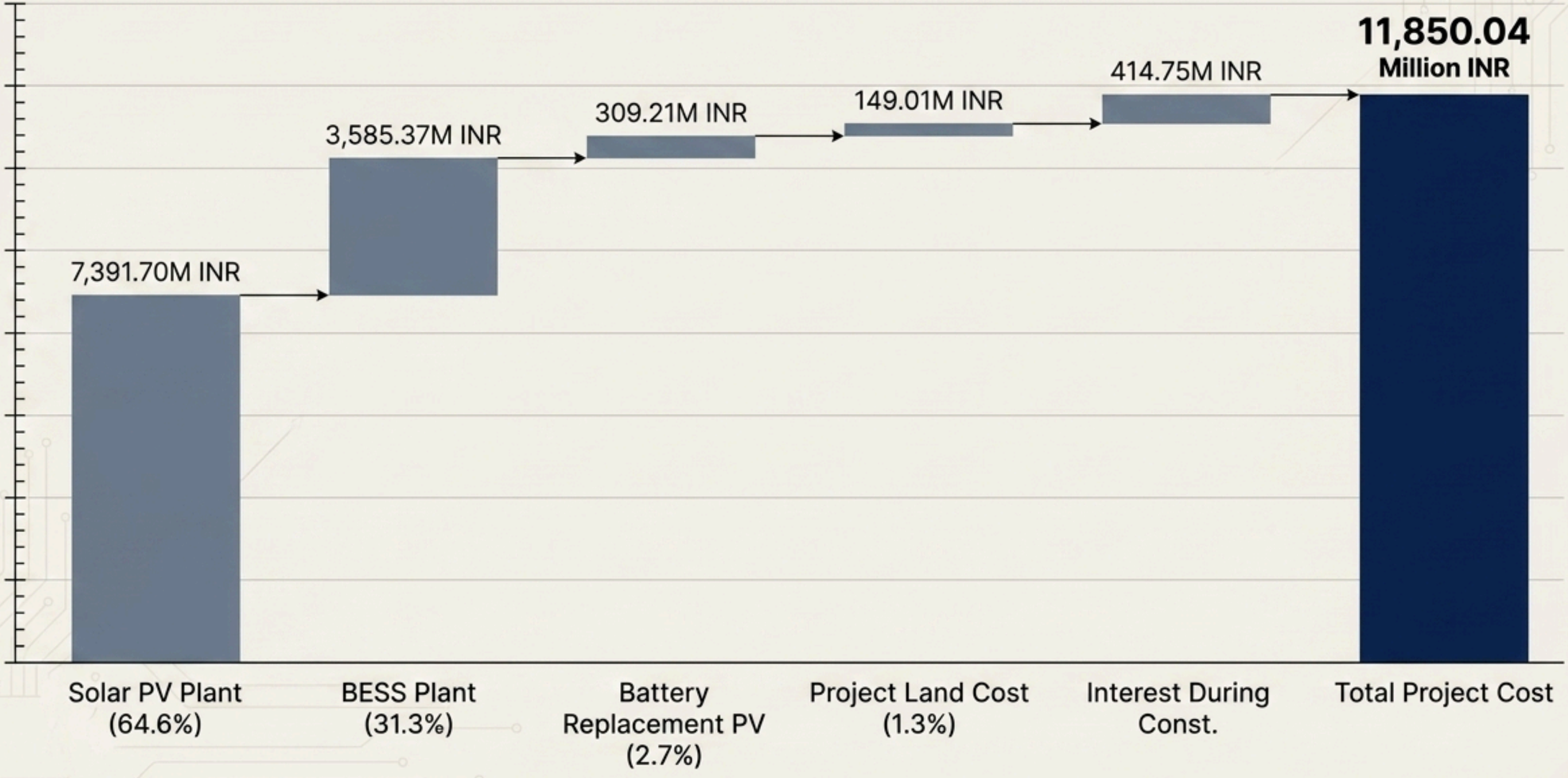
0.9 kg CO_2e/kWh

Real-World Equivalencies: **466,132** tons of CO_2e/year equals **108,609** passenger cars off the road OR **199.5 Million** liters of petrol saved.

The Carbon-to-Cash Converter

Strategic Insight: This is a completely decoupled secondary revenue stream layered on top of physical power sales, directly converting environmental action into bottom-line value.

Capital Deployment Architecture

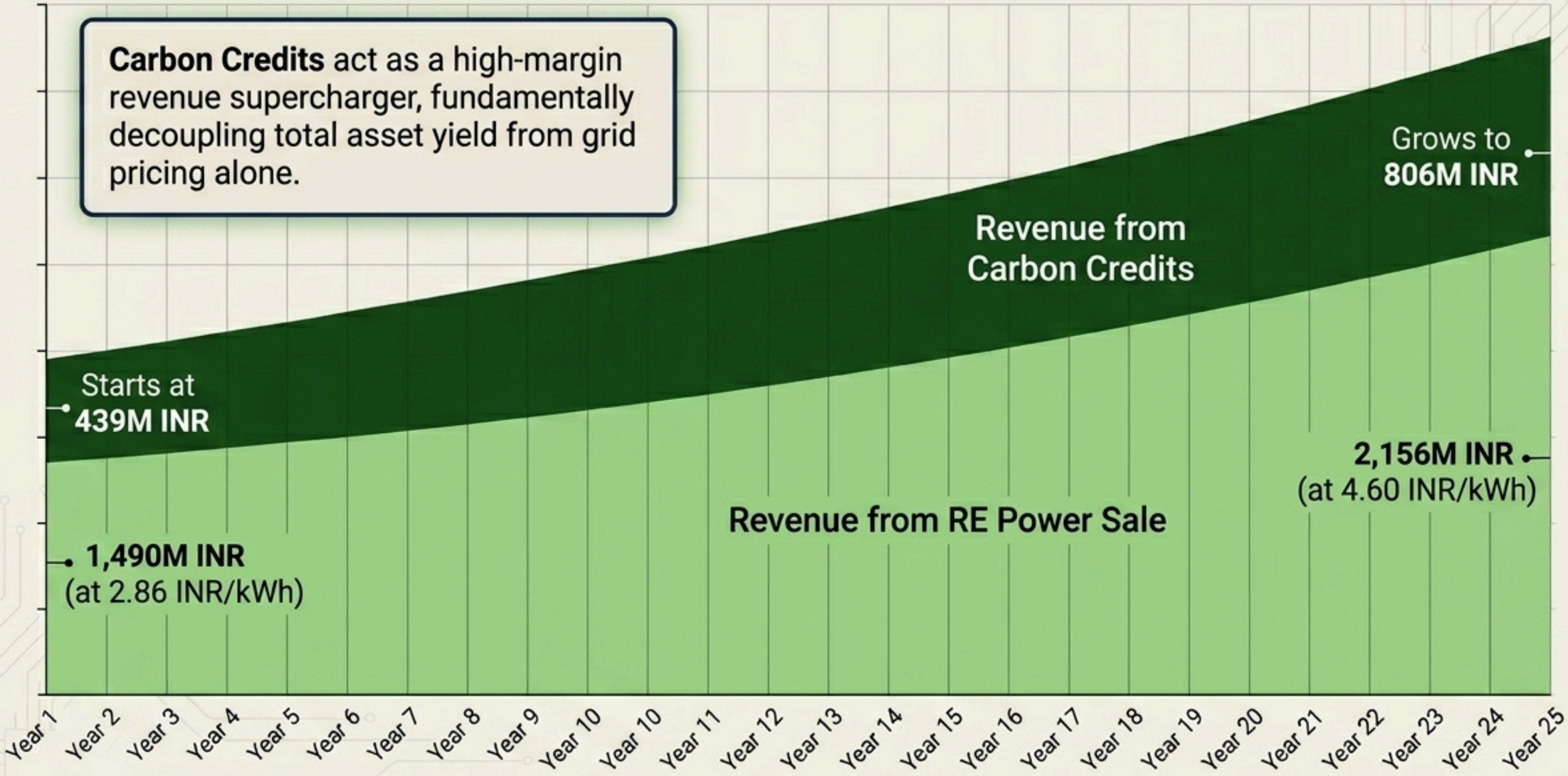


Financing Structure and Capital Stack

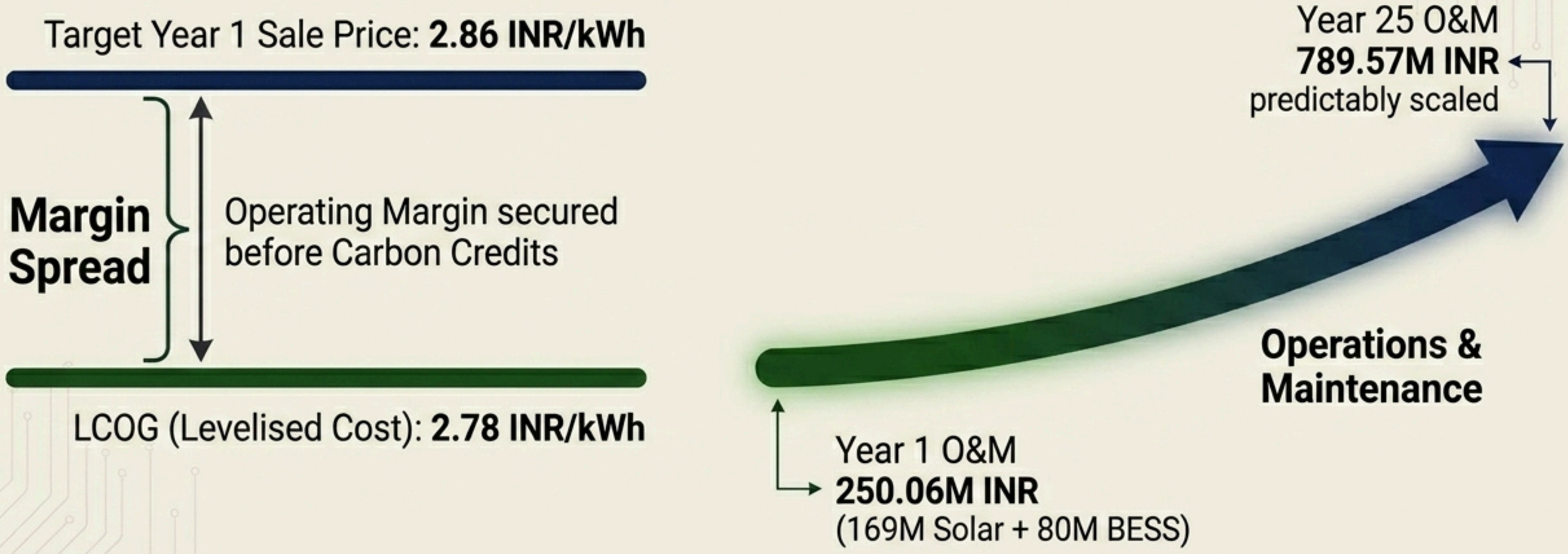
Financing Parameters
Interest Rate: **7%**
Repayment Period: **10 Years**
Moratorium: **2 Years**

Total Borrowing (including 414.75M IDC) equals **8,709.78 Million INR.**

The 25-Year Revenue Stack



Levelised Cost and Operating Margin Profile



Financial Health Blueprint

Debt Service Coverage Ratio (DSCR)

Cash flows clear the 10-year repayment schedule at 7% interest with high safety margins.

Internal Rate of Return (IRR)

Core yield metric for the 3,555M INR equity injection.

Net Present Value (NPV) & Payback

Projected value generation over the 25-year lifecycle.

A highly viable hybrid asset combining proven technical architecture with secure, multi-stream ESG financial returns.

Experience Real Engineering

The Clean Green Energy Mission is more than a program — it is an ENGINEERING movement for Energy Transition!

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