

Round-The-Clock (RTC) Clean Electricity Procurement

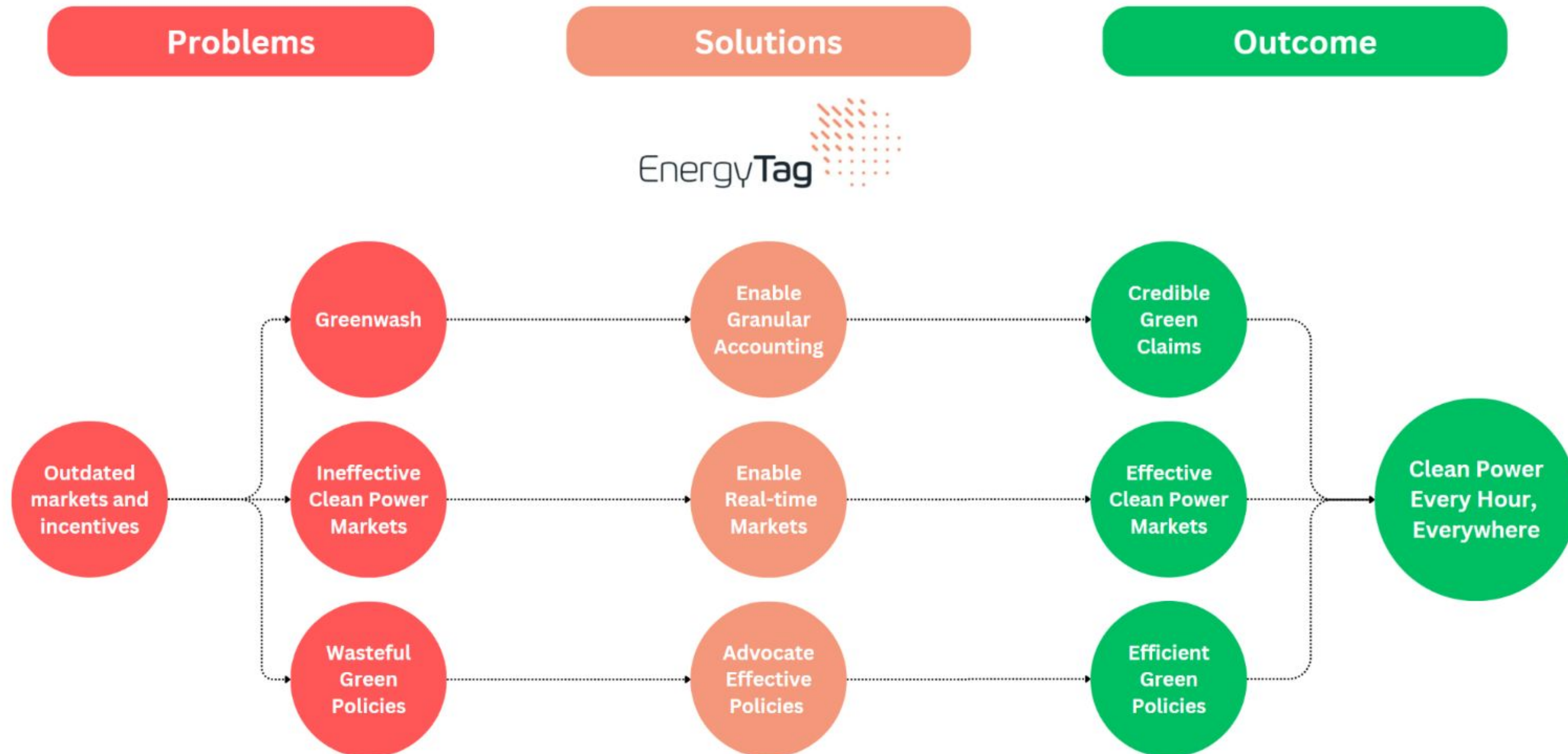
Round-the-Clock Renewables: from annual volumes to hourly matching

— Shailesh Telang, Head of APAC –EnergyTag
15 October 2026 | DEPA Thailand Digital Valley, EEC, Chonburi, Thailand

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About EnergyTag

We promote and enable the standards, markets, and policies needed to effectively deliver clean power every hour, everywhere.



INTRODUCTION

About EnergyTag

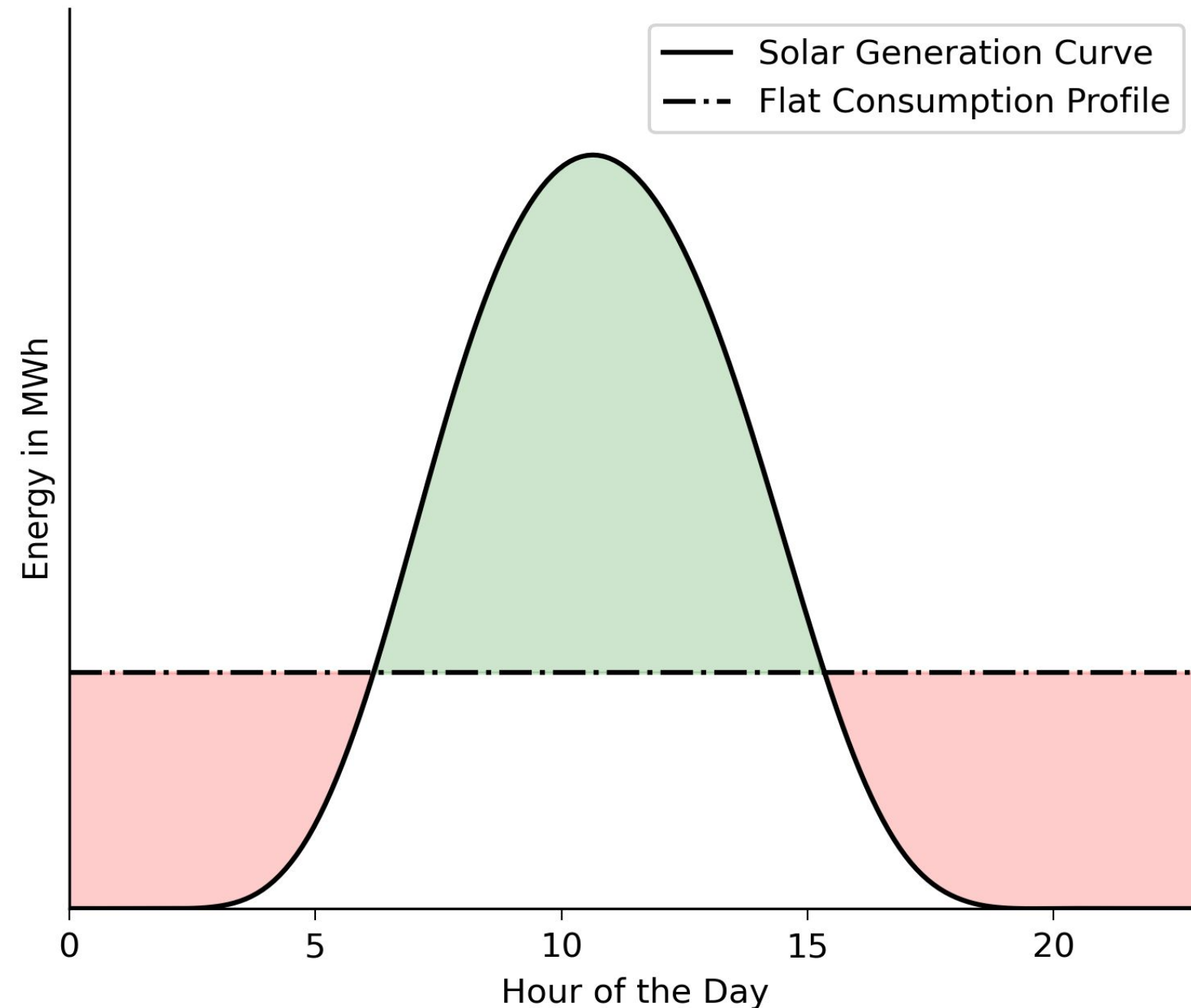
Trusted By Leaders



PART 1

Why Time Matters?

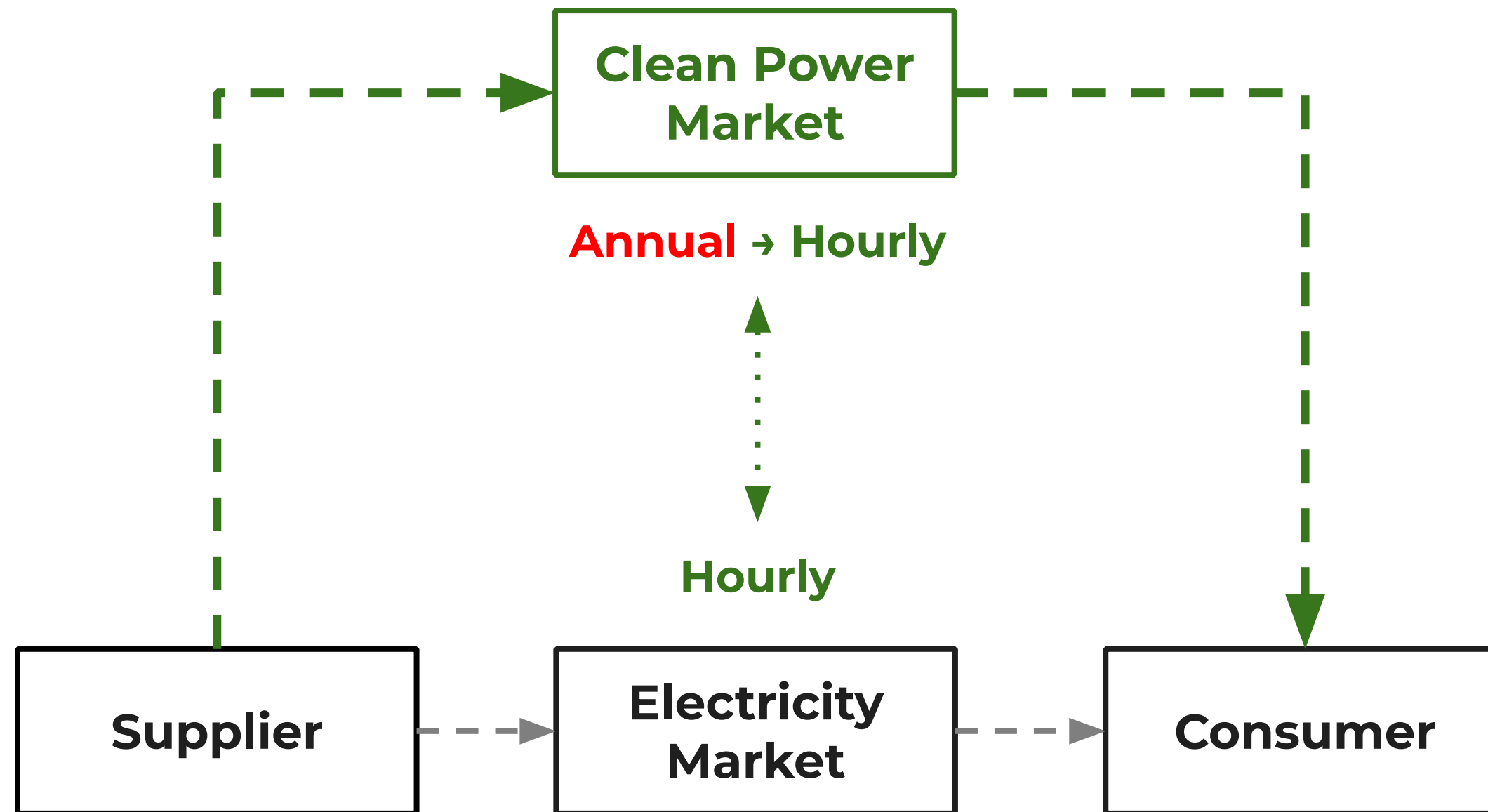
Problem: Today's RE Claims Does Not Reflect Grid Reality



Temporal Mismatch between
Consumption and Generation

- Generation and consumption is matched **annually**.
- A company can be “**solar** powered at **night**”
- This **negates crucial incentives** for storage or demand flexibility.
- Companies can reach 100% Renewable without thinking about the “**hard hours**”.
- A more **reality-based approach** is needed to ensure that clean power markets reward renewables, storage, and flexibility.

Solution: Align Clean Markets with Power Markets

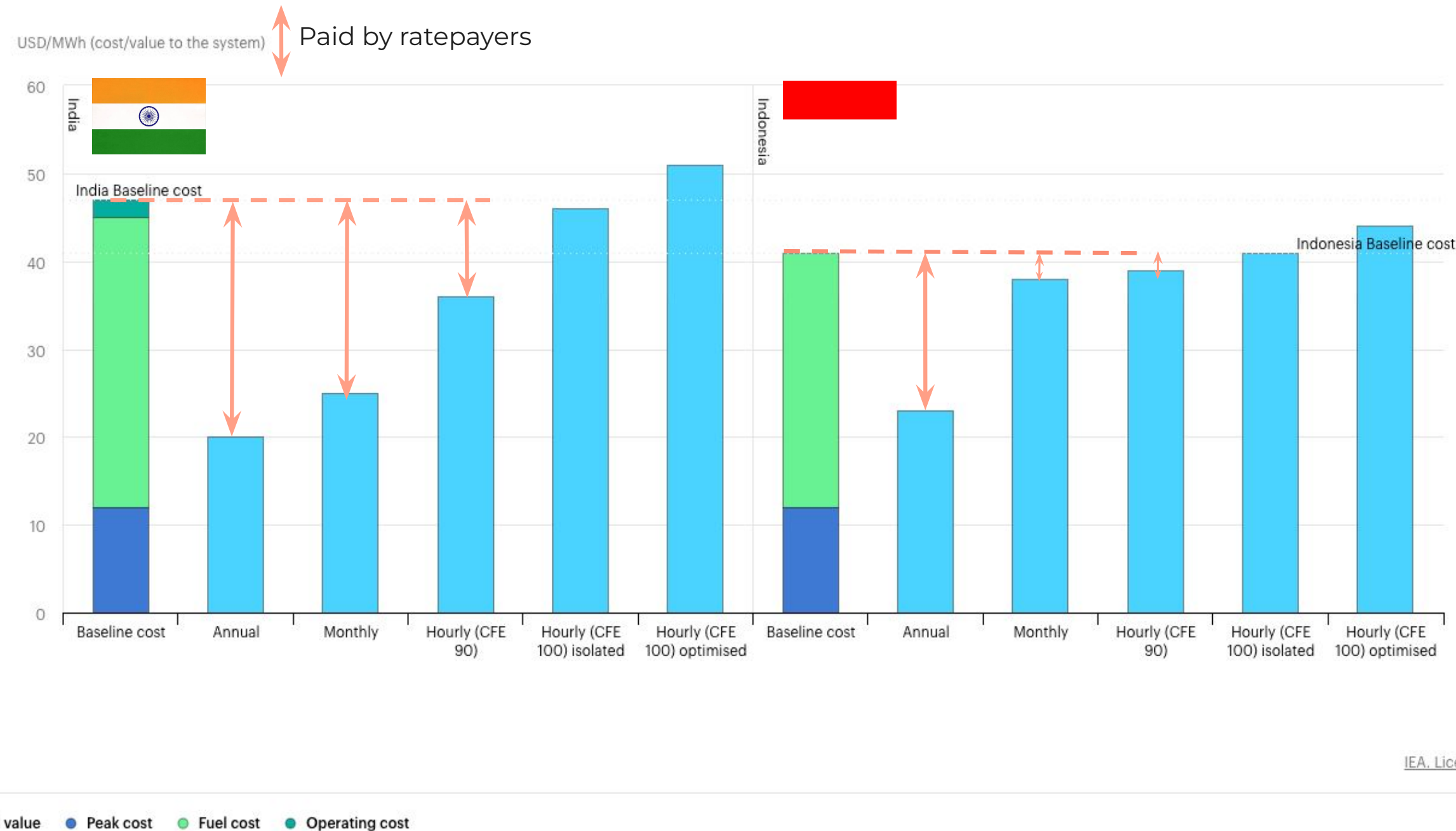


- Global power markets based on (sub) hourly matching for years.
- Aligning clean power markets with power markets fixes the issue.
- The incentive structure long-term more robust.

The Global Rules of the Game Are Changing

Standard	Description	Timeline
 GREENHOUSE GAS PROTOCOL	→ World's leading standard, used by 90%+ of Fortune 500 → Basis for regulations (e.g. EU' CSRD, IFRS, California)	2028
 SCIENCE BASED TARGETS	→ World's leading target setting initiative, ~2000 targets → Companies with significant electricity consumption (labelled "Category A") are required to publicly report their hourly matching performance	Active
	→ World's leading standards organization, WTO aligned. → Creating 14060 (NZ targets) and updating 14064 (CO₂ Accounting)	2027
	→ Climate Group's newest campaign seeking to build on RE100 → Companies commit to hourly, local matching approaches,	Active
	→ Renewable Hydrogen Rules already require hourly matching (+exports) → CBAM require hourly matching for selected commodities.	Active

Hourly Matching Is Cheaper for the System



Baseline cost = what it normally costs to reliably supply this company's electricity (peak capacity + fuel + operations).

Annual, Monthly, Hourly bars = the value of a clean-energy portfolio built to meet each matching standard

Annual matching portfolio doesn't provide the grid reliability companies still relies on.

Unpaid-for reliability gets spread across everyone else's electricity bills ("ratepayers").

Annual matching portfolios is below the cost to serve the corporate load with standard grid supply, while hourly matching portfolios bring much higher value

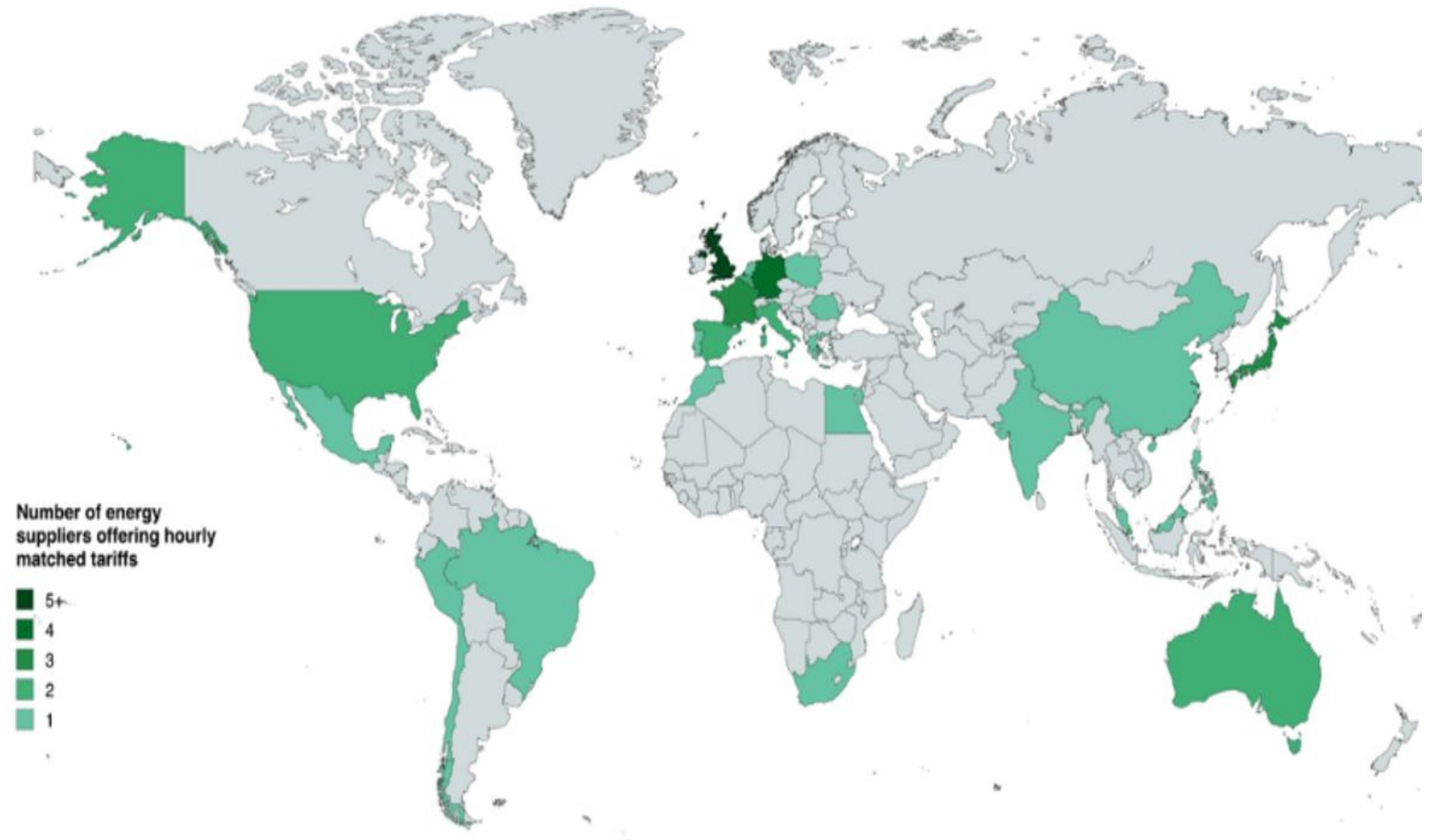
Hourly Matching is Feasible

46 energy suppliers already offer an hourly matching tariff in markets making up over 70% of global electricity demand.

The State of Hourly Matching

A report by

granular energy  



Case Study: India's First Hourly CFE Solution

PDG's 150 MW Mumbai data-center campus - matched hourly to carbon-free electricity, with Flexidao and Tata Power Renewables.

PDG

Data-center operator

Flexidao

Matching platform

**Tata Power
Renewables**

Renewable energy partner

150 MW

MU1 data-center campus,
Mumbai

- ✓ Hourly temporal matching — not annual or seasonal
- ✓ Regional geographical matching
- ✓ Automated matching via Flexidao's platform
- ✓ Centralised documentation, aligned with EnergyTag guidance

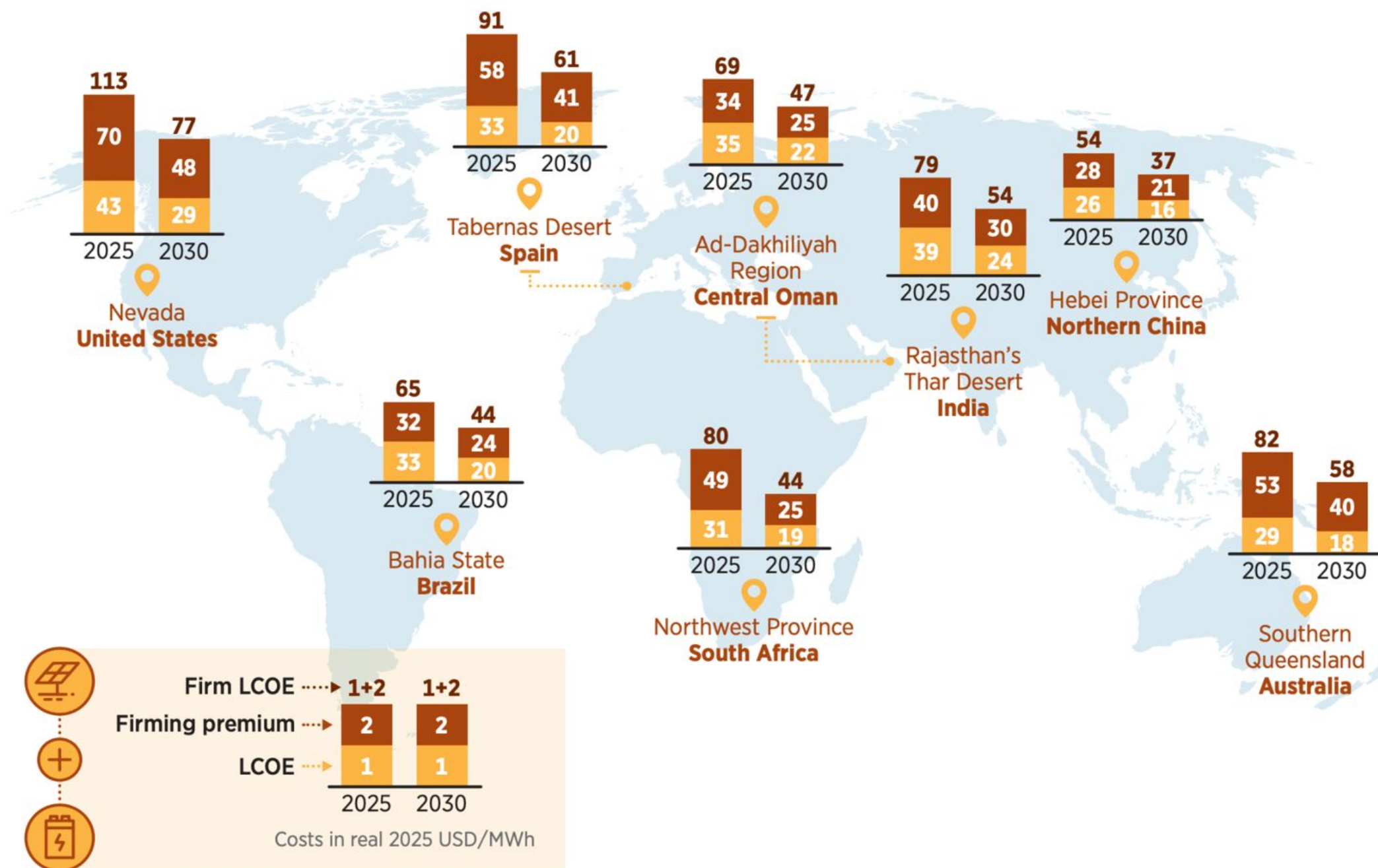
“Using automated hourly data matching, PDG can now align its electricity consumption in real time.”

First data-center operator in India to implement hourly time-matched CFE.

Next: scaling the model across PDG's other Asia-Pacific sites.

The 24/7 Renewable Opportunity

Figure 4 LCOE and firm LCOE at 95% reliability for selected solar PV sites, 2025 and 2030



- **Firm renewables** are already **cost-competitive** in good resource zones.
- China is the global cost floor.
- Hybridization (solar + wind + storage) **beats single-technology firming.**
- Policy, not just cost, determines **deployment speed.**
- Rising demand for firm, hybrid renewables is being pulled by the **shift from annual to hourly, location-matched clean electricity accounting**





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By [Andy Colthorpe](#)
August 27, 2026

Africa, Africa & Middle EastConnected Technologies, Off GridTechnology

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AES Announces First-of-Its-Kind Agreement to Supply 24/7 Carbon-Free Energy for Google Data Centers in Virginia

This transaction will result in the construction of approximately 500 MW of renewable energy and storage projects to ensure Google's Virginia-based data centers will be 90% carbon-free when measured on an hourly basis



Gentari Partners with UltraTech to Commission India’s First-of-Its-Kind On-Site Hybrid RTC Renewable Energy Project

The project delivers 7.5 MW of RTC clean energy through integrated solar, wind, and battery storage.



PART 2

How Indian Tenders Define Delivery Requirements and Manage Shortfalls

From Renewable Energy to Time-Specific Delivery

India's renewable procurement has progressively moved beyond annual volumes toward firmer, time-specific delivery.

HYBRID

Primarily annual renewable-energy / CUF requirements



Firm and Dispatchable Renewable Energy (FDRE)

Firm renewable supply during specified periods



Round the Clock (RTC)

Different delivery requirements across the day. Performance assessed in 15-minute blocks.

What does RTC mean in India's tender?

Demand Fulfilment Ratio (DFR) = Scheduled Injection in a particular time block (MW) ÷ Contracted Capacity (MW)

- Procurement is in power (MW) terms
- Mandatory Energy Storage System
- Renewable + storage portfolio optimised by developer
- Not 100% renewable supply in every interval

KEY MESSAGE

India is progressively putting a value not only on how **much** renewable electricity is supplied, but **when** it is supplied.

Latest Tender Design: Different Firmness for Different Hours

RTC does not mean a flat 100% requirement - the tender deliberately requires different levels of firmness at different times.

PEAK HOURS

≥90% DFR

- Any 6 hours
- Selected by Buying Entity, day-ahead
- Within 18:00–10:00 next morning

SOLAR HOURS

50–60% DFR

- Based on GRID-INDIA / GNA Solar Hours
- Defined for the project's state*

REMAINING HOURS

≥70% DFR

- Non-Solar Hours outside selected Peak Hours

Every requirement applies in each 15-minute block · A Day runs 00:00–24:00 Hrs (96 blocks/day)



*varies by the state where the project sits (since actual solar generation windows shift with latitude/season across India)

Accountability + Flexibility

Defines the delivery outcome and shortfall consequences, while leaving developers room to optimize generation, storage and excess electricity.

SHORTFALL

**Penalty = 1.5 × PPA tariff
× shortfall energy**

Persistent DFR failure can ultimately trigger contractual default provisions.

STORAGE CONFIGURATION

BESS: subject to co-location requirements

PSP: may be located offsite under specified conditions

EXCESS POWER / PORTFOLIO OPTIMISATION

- Power above Contracted Capacity may be sold to third parties / power exchanges
- If purchased by the Buying Entity: PPA tariff in Peak/Remaining Hours; 50% of PPA tariff in Solar Hours*
- During Solar Hours, supply above the 60% DFR maximum may be sold externally only after giving the buyer first right of refusal

WHY PORTFOLIOS OUTPERFORM SINGLE ASSETS

Weather-driven shortfalls across Indian states correlate only 30–60% even between neighbours, and near zero between distant states. A single plant can miss a 1 GW firm target in roughly 8% of hours; a fleet diversified across many states misses almost none.

* Plus, trading margin. Portfolio-reliability analysis: India Energy & Climate Center / UC Berkeley Goldman School, FDRE-RTC-V companion study.

PART 3

What Tender Outcomes Reveal About Prices and Developer Participation

Strong Developer Participation

A relatively demanding 15-minute delivery product still attracted more than three times the capacity being procured.



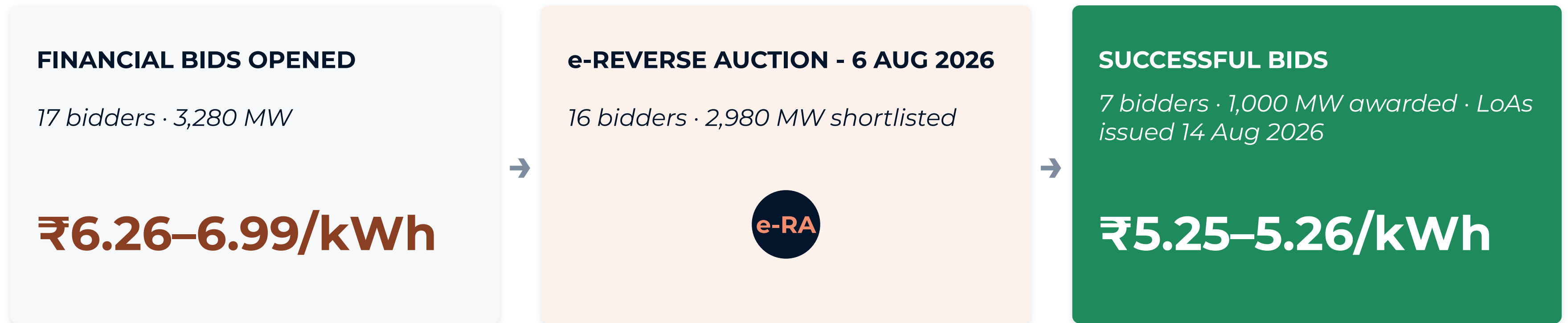
Successful developers: EMIF II, Hero Solar, Purvah Green Power, Resolven Four Energy, Kengeri Prime Solar, Hexa Climate Solutions and Juniper Green Energy.

KEY MESSAGE

This is an important correction to earlier interpretations - the latest tender does not show thin developer participation.

Competition Compressed the Price

Initial bids ranged ₹6.26–6.99/kWh; the e-reverse auction produced winning tariffs tightly clustered at ₹5.25–5.26/kWh.



At ₹95.21/USD: ₹5.25/kWh ≈ US\$55/MWh

PART 4

Lessons for Other Markets

What Can Other Markets Learn from India?

The transferable lesson is not to copy India's percentages - it is to design procurement around the load, system conditions and risk allocation.

1 Define when electricity is needed

Move beyond annual renewable-energy volumes where continuous supply matters.

2 Firmness does not have to be uniform

India applies different requirements to Peak, Solar and Remaining Hours.

3 Make shortfall accountability granular

Monthly commercial settlement can coexist with 15-minute performance accountability.

4 Give developers configuration flexibility

Specify the delivery outcome rather than prescribing one generation/storage configuration.

5 Create routes for excess generation

Merchant sales and excess-power provisions can support portfolio optimisation.

6 Build on existing market rules

Uses existing GRID-INDIA/ General Network Access (GNA) definitions for Solar/Non-Solar Hours.

The Next Step: Make Clean Power Verifiable in Time

Four practical steps for EEC companies to match electricity use with clean supply, hour by hour

1

Know your hours

Get hourly (interval) load data. When does each site actually use power?

2

Ask for time

When buying (UGT1* now, UGT2 and Direct PPA later), ask for hourly delivery profiles and time-stamped certificates.

3

Start with today's options

Use on-site solar, RECs and UGT1 now. Check how much of each hour's use clean supply covers; annual RECs can't show this.

4

Match in the same grid

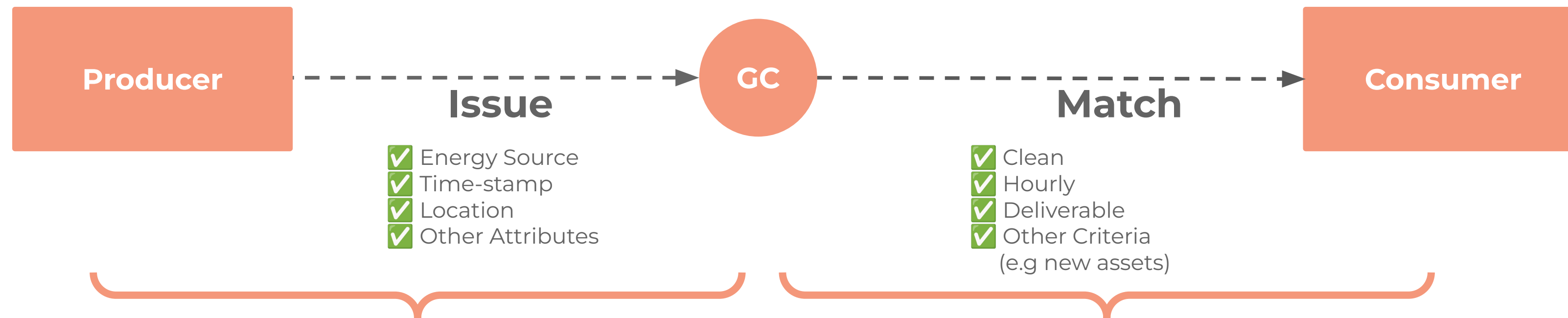
Clean supply should come from the grid that serves your site, so it could really meet your demand, not just offset it.

THE OPPORTUNITY

Direct PPA rules are still being finalized and UGT2 starts in 2027: hourly data can be built in from the start, not retrofitted.

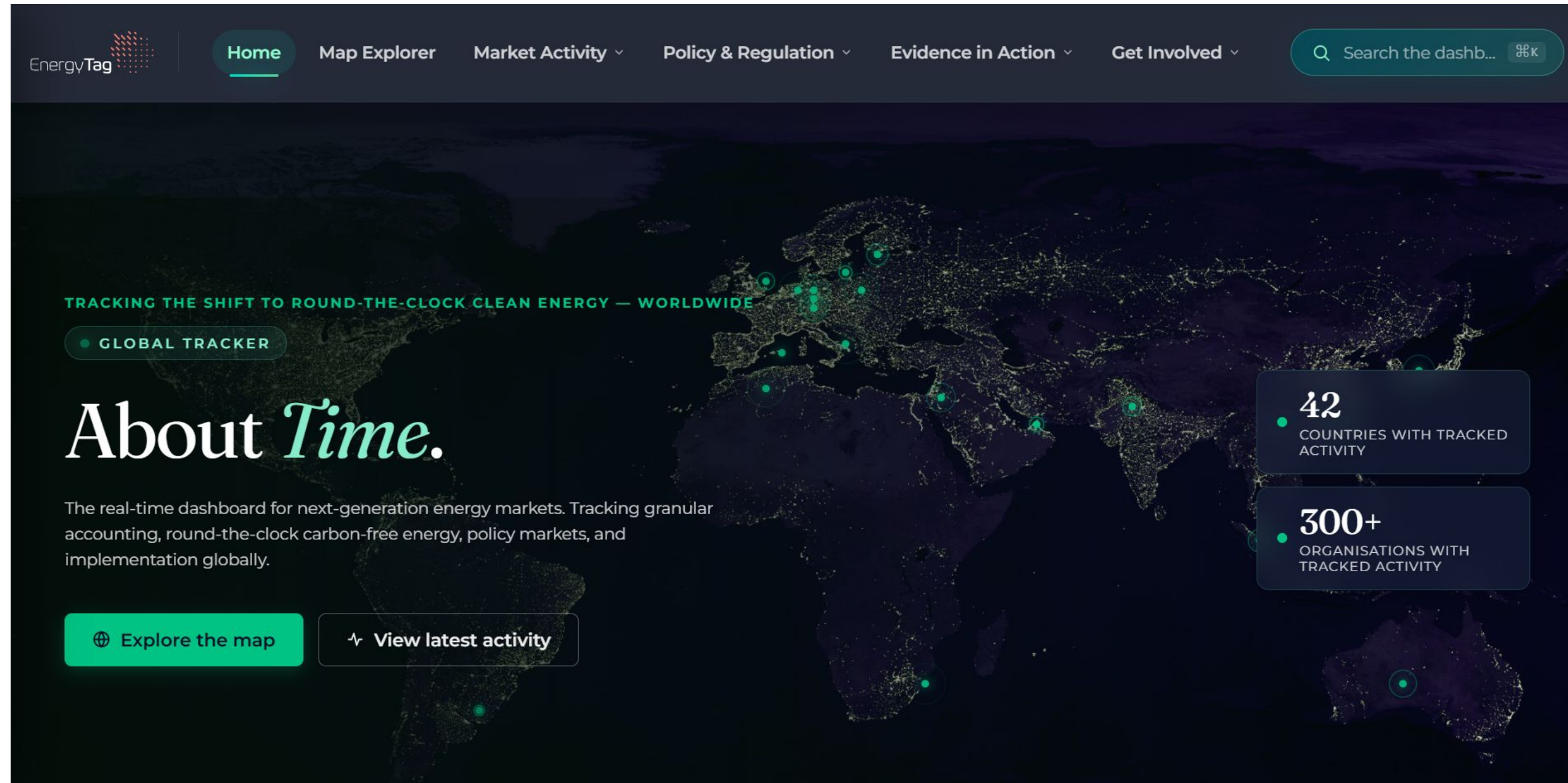
*Utility Green Tariff (UGT)

Our Open-Source Standards Enable This



CLOSING

EnergyTag's 'About Time' Platform



The **real-time dashboard** for next-generation energy markets. Tracking granular accounting, round-the-clock carbon-free energy, policy markets, and implementation globally.

<https://about-time.energytag.org/>

Thank you

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