Neufin Energy

The India Energy Stack

A Digital Infrastructure Blueprint for Businesses

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Foreword

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India’s energy transition will be built as much on invisible infrastructure as on physical assets. The wires, turbines, and solar panels are visible; the data rails, identifiers, and assurance protocols are not. Yet without these, India's ambition to be energy independent will remain stranded in PowerPoints and registries. The India Energy Stack (IES) is a digital public infrastructure initiative by the Ministry of Power. It takes the hard-won lessons of India’s digital public infrastructure journey (AADHAAR, UPI, ONDC) and applies them to energy. Three ideas anchor the work: i) identities reduce transaction friction, ii) consent frameworks protect rights while enabling innovation and, iii) verifiable records create trust across markets, regulators, and financiers. This paper lays out both the context and the possibilities.

We show how IES can complement existing systems like the National Open Access Registry (NOAR) and the Carbon Credit Trading Scheme (CCTS), align with India’s evolving data-rights regime, and cut the assurance burden for auditors and lenders. We also illustrate its practical impact through case studies that connect flexibility markets, renewable procurement, and green finance. The agenda is collaborative. Regulators must provide clarity, enterprises must lean in with demand, financiers must reward verifiability, and technology providers like us must design responsibly. If we succeed, IES can become the connective tissue that not only accelerates India’s energy transition but also delivers reliable, cheaper energy to its millions of consumers.

Executive Summary

India's renewable growth (RE) story will be secured not only by adding gigawatts, but by embedding transparency and verifiability into the market's core plumbing. The India Energy Stack (IES) is proposed as such a digital public infrastructure layer. It complements today's plumbing, NOAR, state Open Access portals, power exchanges, DSM systems, and carbon-market registries by establishing three foundational pillars that are currently absent.

- Common identities for consumers, sites, and assets.
- Consent-based, auditable data exchange aligned with India's data-rights regime.
- Verifiable, tamper-evident records for transactions, schedules, and green claims.

With this foundation, IES enables practical expansion of renewable procurement under the Green Open Access Rules, supports compliance-grade record-keeping for the Carbon Credit Trading Scheme, and reduces the friction and cost of assurance in both audits and financing.

Case studies in this report illustrate how IES can:

1. Allow MSMEs to pool flexibility into verifiable demand response portfolios, with settlements and payouts automated.

2. Enable corporates to link VPPAs and Open Access procurement to audit and finance, using hour-stamped green tokens that auditors and lenders can trust.

By embedding digital trust in India's energy markets, IES lowers compliance costs, increases participation, and improves the bankability of renewable pathways. It positions India not only to meet its domestic RE commitments, but also to compete credibly in carbon-constrained trade regimes.

Introduction

India's energy sector is entering a critical phase of transformation. As the country targets becoming a $5 trillion economy[1] while fulfilling its global commitment to achieve net zero emissions by 2070[2], the demands on its electricity system are intensifying. Electricity consumption is projected to more than double by 2040[3], driven by rising per capita income, rapid industrialisation, and widespread electrification of transport and cooking[4]. Meeting this demand reliably, affordably, and sustainably requires a fundamental rethinking of the sector's operational and digital architecture.

RE reforms of the past have largely concentrated on expanding physical capacity, such as adding generation assets, strengthening transmission corridors, and rolling out smart meters and renewable projects. These measures have been necessary, but remain insufficient for systemic transformation.

India's power sector continues to operate with fragmented data systems, limited consumer-facing platforms, and weak integration between operational technologies and digital services. For most consumers, this means little visibility into usage data, tariffs, poor service quality, and weak integration between operational technologies and digital services. As a result, consumers are unable to make informed choices. Utilities lack real-time visibility and decision-making tools, and the broader innovation ecosystem remains constrained by high entry barriers and inconsistent data access.

Against this backdrop, the concept of the India Energy Stack (IES) has emerged as a transformative vision for a unified, digital public infrastructure for India's electricity sector. IES proposes a layered, interoperable, and consent-based digital architecture, similar to AADHAAR in identity, UPI in payments, and ONDC in e-commerce, that can unlock transparency, trust, and innovation across the power value chain. The paper explores the rationale for the IES, its proposed structure, international analogues, implementation roadmap, implications for the private sector, and the role Neufin seeks to play as a strategic enabler of the vision.

The Need for a Digital Public Infrastructure in Power

India's power sector, though modernising rapidly in terms of physical infrastructure, remains fundamentally under-digitised and disjointed. Critical data such as consumer usage patterns, grid level demand forecasts, and performance metrics of distributed energy assets are siloed, available only in aggregate, or completely absent. Even where data exists, it is often not machine readable[5], lacks standardisation, or cannot be shared securely due to the absence of consent-based data exchange mechanisms.

This fragmentation has several downstream implications. First, consumers lack visibility into their consumption trends, cannot compare tariffs, and have little agency over their electricity choices[6]. This means consumers lack the ability to easily choose renewable power, compare tariffs, or switch suppliers across distribution companies (DISCOMs) - whether in choosing green power or switching suppliers. Second, DISCOMs are unable to dynamically respond to demand fluctuations[7], optimise asset deployment, or run predictive maintenance regimes. While new tools such as 50Hz or private Distributed Energy Resource Management Systems (DERMS) platforms are emerging[8], most DISCOMs still lack the analytical infrastructure and real-time visibility needed for demand forecasting, load balancing, or predictive maintenance. Third, policymakers and regulators operate with delayed and incomplete datasets, impeding effective planning and oversight[9]. Finally, startups and innovators in the energy/power sector face disproportionately high transaction costs in accessing and using data or integrating with legacy systems[10].

India's success with digital public infrastructure in other sectors provides a clear path forward. AADHAAR enabled a universal identity layer, UPI created open, real-time payments, and more recently, ONDC is standardising e-commerce interoperability[11] [12]. Each of these initiatives relied on a layered architecture comprising core registries, consent-based data exchange, and open APIs that allowed innovation to flourish while maintaining public oversight. The India Energy Stack, by extending this logic to the power sector, can provide a similar backbone for inclusive, scalable, and secure innovation.

[1] Press Information Bureau. (2023). India's $5 trillion economy target – official release. Government of India. [2] Ministry of Environment, Forest and Climate Change. (2021). India's updated nationally determined contributions (NDCs). Government of India. [3] International Energy Agency. (2023). World energy outlook 2023. IEA [4] International Energy Agency. (2021). India energy outlook 2021. IEA. [5] Council on Energy, Environment and Water. (2022). Unlocking digitalisation in India's power distribution sector. CEEW. [6] Bureau of Energy Efficiency. (2022). Report on consumer services in India's electricity distribution. Government of India.

Understanding the Core Issues in India's Power Market and the Promise of the India Energy Stack

India's power sector has made significant strides in recent decades, including near-universal electrification[13], rapid renewable energy deployment[14], and improvements in grid reliability[15]. Despite this progress, the sector continues to grapple with persistent structural and operational hurdles. These issues extend beyond financial or engineering constraints - they are increasingly driven by institutional gaps and a fragmented digital landscape.

1

Fragmented Digital Architecture and Isolated Data Systems

Despite the progress made by India's power sector, it continues to grapple with persistent structural and operational hurdles.

- Data on metering, billing, network assets, outage logs, and consumer complaints is hosted on proprietary legacy platforms with little interoperability.

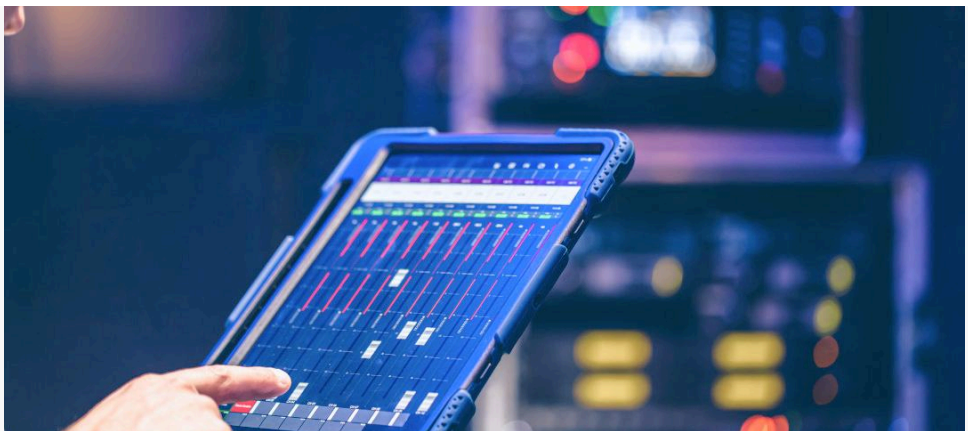
[7] Forum of Regulators. (2023). Report on load forecasting and DSM in India. FOR Secretariat. [8] Mercom India. (2024). DISCOM digitalisation and DERMS adoption trends. Mercom Communications India. [9] ICentral Electricity Authority. (2023a). Load generation balance report 2023–24. Government of India. [10] Council on Energy, Environment and Water. (2023). Barriers to innovation in power distribution. CEEW. [11] NITI Aayog. (2018). India's digital public infrastructure framework. Government of India. [12] NITI Aayog. (2020). Data empowerment and protection architecture (DEPA). Government of India. [13] Ministry of Power. (2021). Saubhagya household electrification scheme – achievement report. Government of India. [14] Ministry of New and Renewable Energy. (2024). Renewable energy capacity update. Government of India. [15] Central Electricity Authority. (2023b). Annual report 2022–23. Government of India

- Smart meter data, SCADA telemetry, and supervisory control systems often lack standardisation or live synchronisation, reducing their utility for operational decision-making.

- There is no unified system of registries to map consumers, energy assets (e.g., rooftop solar, EV chargers), or grid transactions in a verifiable and persistent manner.

The result is a duplication of effort, data silos, and inconsistencies that undermine trust and transparency across the value chain - from regulators to consumers.

2



Limited Consumer Empowerment and Lack of Visibility

Despite reforms keeping pace over the past decade, consumers remain largely passive, with minimal ability to monitor or influence their energy use.

- Most consumers cannot access real-time or historic usage data in formats that allow for meaningful benchmarking, diagnostics, or tariff analysis.

- There is no portability of service or data across DISCOMs or states. Consumers relocating their operations or switching suppliers must restart the process from scratch, with no persistent identifiers or grievance history carried forward.

- Green energy procurement, though legally permitted through Open Access or captive mechanisms, suffers from verification gaps. There are no real-time digital certificates or registries to back sustainability claims, undermining ESG transparency.

As a result, consumers lack the tools or trust necessary to engage with a liberalised, decarbonised energy market. They lack access to real-time or historical consumption data in usable formats, face non-portable services across DISCOMs, and encounter significant challenges in verifying green energy claims.

3

Increased Complexity with Limited Analytical Tools for Utilities

DISCOMs are expected to manage growing and increasingly complex responsibilities, including integrating rooftop solar, responding to demand peaks, managing losses, and complying with RPO and grid code targets. However, they lack the analytical infrastructure and real-time visibility to do so effectively.

- Most utilities rely on static spreadsheets, legacy MIS systems, or vendor-locked dashboards to model load curves, tariff impacts, or outage responses.
- Feeder-level telemetry is partial or delayed, making demand forecasting and load balancing reactive rather than predictive.
- There are no integrated tools that combine consumption, grid health, asset status, and renewable generation into a unified dashboard or decision-making interface.

This results in suboptimal planning, poor service quality, and delayed response to grid stress or consumer complaints. Utilities not only face the technical challenge of integrating distributed energy but are also exposed to financial penalties under the Deviation Settlement Mechanism (DSM)[16]. These penalties, linked to schedule mismatches and frequency deviations, act as a forcing function for utilities to adopt more robust forecasting, digital monitoring, and compliance systems.

[16] Central Electricity Regulatory Commission. (2022). Deviation Settlement Mechanism Regulations, 2022. Government of India.

4

Barriers to Innovation, Market Entry, and Ecosystem Development

Startups and new-age service providers face high transaction costs when engaging with utility systems due to the absence of standardised access points.

- There are no common APIs, test environments, or data-sharing protocols that allow innovators to develop and deploy new tools safely whether for demand response, energy analytics, or green billing.

- Regulatory frameworks often reward risk-averse behaviour. Utilities are penalised for data sharing but not incentivised to experiment with open systems or pay-for-performance models.

- Key innovation enablers such as sandboxes, data marketplaces, and developer toolkits that are commonplace in banking or mobility are virtually non-existent in the energy sector.

This deters venture investment, slows down the pace of digitalisation, and prevents the scaling of successful pilots into mainstream offerings.

5

Absence of Digital Governance, Carbon Accounting, and System-wide Accountability

Perhaps the most critical gap is the lack of a common digital governance framework that supports verifiability, auditability, and coordination across the energy ecosystem

- There is no standard protocol for embedding carbon metrics into energy data, hindering green claims, certificate trading, or emissions-based tariffs.
- Governance tools are largely manual or rules-based, without layered data pipelines to support real-time supervision, benefit targeting, or compliance monitoring.
- Shared maps of the grid, including topology, ownership, and performance, are incomplete or non-public, making integrated planning difficult for system operators and regulators.

These issues are particularly pressing as India begins to implement the Indian Carbon Market (ICM), Green Credit Programme, and time-of-day tariffs. Without a unified digital layer to track and coordinate actions, policy ambition will far outpace implementation capability. The India Energy Stack directly addresses these first-principle barriers by embedding digital trust mechanisms, standardised open APIs, and shared registries that provide a single source of truth for energy transactions and market participants.

Situating IES within India's current policy and market plumbing

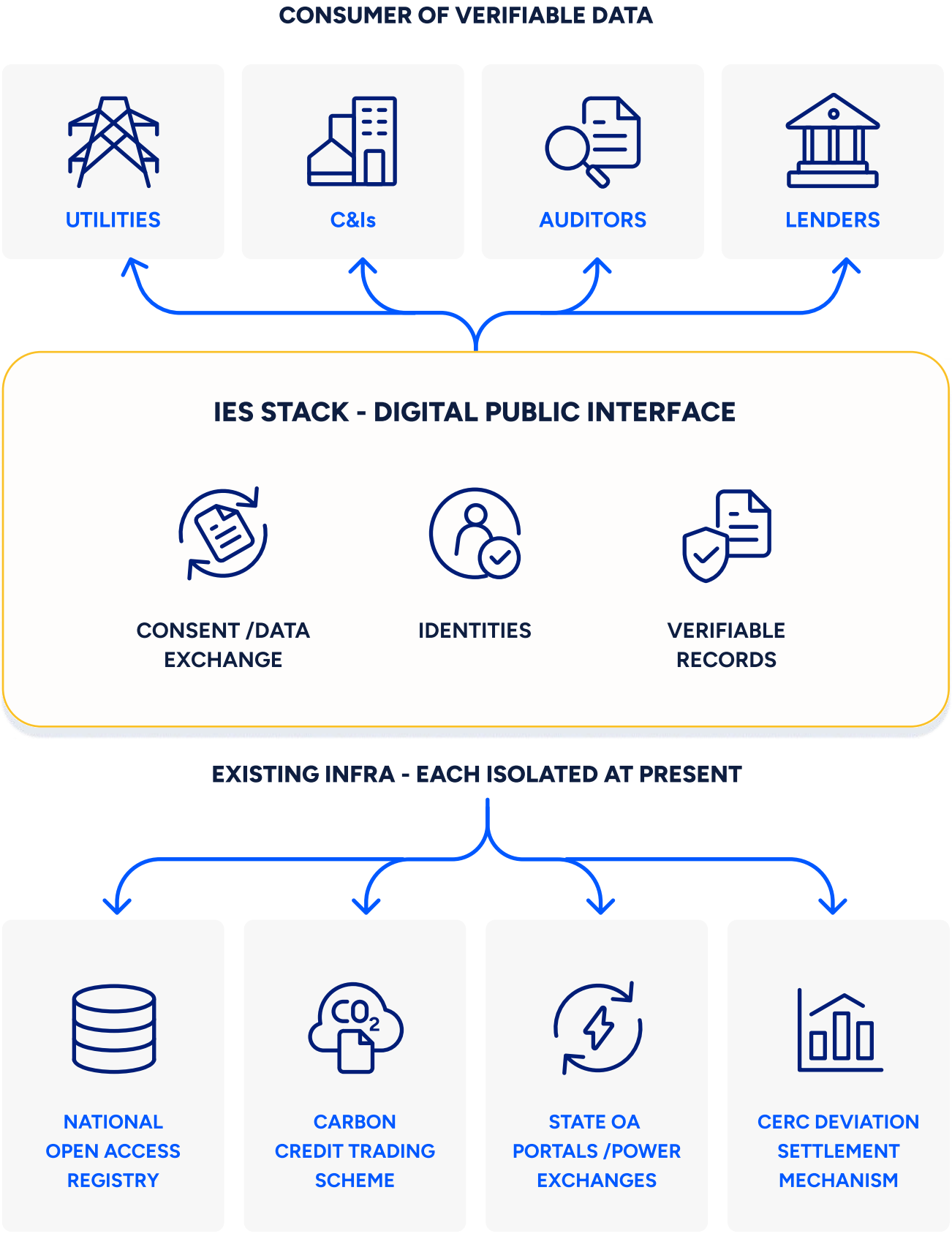
India's Energy Stack (IES) is a digital public infrastructure that knits together existing market and regulatory systems by establishing three foundational pillars:

1. Common identities for consumers, sites and assets.

2. Consent-based, auditable data exchange.

3. Verifiable records for transactions and claims.

IES complements today's plumbing rather than replacing it. It aligns with India's data-rights regime by embedding revocable, purpose-limited access to metering, billing and settlement data, creating a trustworthy substrate for enterprises, utilities, auditors, and lenders.



In the absence of IES, each stakeholder would have to access each piece of Infra separately, often without digitisation. **IES bridges that gap.**

Overview of the IES

Against this governance backdrop, IES enables the practical expansion of green procurement opened by recent rules that lower the threshold for participation by commercial and industrial consumers to less than 100 kW. It also supplies verifiable and immutable evidence trails for emerging carbon-market processes, reducing assurance friction and improving the comparability of claims across states and portfolios. By standardising schedule and meter data at the operations level, the IES streamlines reconciliation and makes deviation charges more predictable. For companies managing multi-site portfolios, this translates to a more cost-effective way to ensure regulatory compliance.

India has already laid important pieces of digital and market infrastructure that the IES can build on rather than supplant.

1

First, at the market-operations edge, the National Open Access Registry (NOAR) has been live since 1 May 2022[17]. NOAR automates and standardises the electronic processing of short-term Open Access applications on the inter-state transmission system (ISTS), and serves a wide set of participants including Open Access consumers and generators, traders, power exchanges and the national/regional/state load despatch centres. As conceived, IES would not replace NOAR; it would provide foundational identities, consent artefacts and verifiable records that allow NOAR, state portals and exchanges to interoperate more seamlessly with enterprise systems and auditors.

2

Second, on the data rights and governance dimension, the Digital Personal Data Protection Act, 2023 establishes core obligations and rights - lawful purpose, notice and consent, storage limitation, data principal rights and documented grievance mechanisms[18]. An IES consent framework must align with these principles and provide a machine-auditable trail of who accessed what, for which purpose, and when. This is essential if meter streams, settlement data and certificate records are to be shared confidently across utilities, enterprises, auditors, and lenders.

IES can serve as the consent and audit backbone ensuring every access event is verified across stakeholders.

3

Third, for green procurement and access, the Electricity (Amendment) Rules, 2022 (Promoting Renewable Energy through Green Energy Open Access) reduced the eligibility threshold for green Open Access from 1 MW to 100 kW[19], materially widening participation for commercial and industrial consumers. The Rules also envisage a centralised registry and a single-window application process for green Open Access. IES can provide the common identifiers (consumer, site and asset), the consent rails to retrieve data from multiple portals, and the integrity layer for green-claim evidence, while remaining compatible with the procedures notified under the Rules.

[17] POSOCO. (2022). Launch of the National Open Access Registry. National Load Despatch Centre. [18] Government of India. (2023). Digital Personal Data Protection Act. 2023. Gazette of India.

4

Fourth, the Indian Carbon Market under the Carbon Credit Trading Scheme (CCTS) has moved from concept to regulatory detailing[20]. As India operationalises a national framework with a carbon-credit electronic platform, hour-level, serialised and verifiable green-use records will be increasingly important to support compliance-grade claims and to reduce audit friction. IES can supply these tamper-evident records and expose assurance APIs to accredited verifiers and market institutions.

IES is an additional digital layer that connects NOAR, state Open Access portals, exchanges, and carbon registries through shared identities, consent-based data exchange, and verifiable records.

5

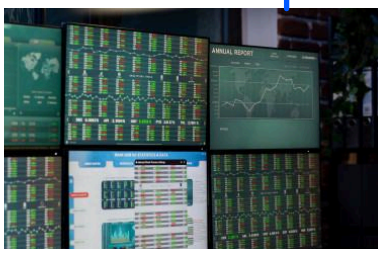
Finally, scheduling integrity remains central to system stability. The CERC Deviation Settlement Mechanism (DSM) Regulations, 2022, and subsequent clarifications and amendments effective 2nd July 2025[21], tighten the link between adherence to schedules and penalties. By offering standardised schedule identifiers, provenance for meter data streams and automated reconciliation tooling, IES can reduce compliance costs and avoidable DSM penalties - particularly for multi-site portfolios and Open Access consumers.

Conceptualising the India Energy Stack

The India Energy Stack is envisioned as a three-tiered architecture that would collectively enable trusted, standardised, and scalable digital services across the electricity ecosystem.

The **core infrastructure** layer includes registries for consumer IDs, energy assets, and transaction identifiers. These registries are persistent, interoperable, and verifiable.

The **core services layer** provides consent-based data sharing, inspired by India's Data Empowerment and Protection Architecture (DEPA). Under this model, consumers explicitly consent to how their energy data is shared, with third parties like auditors, financiers, or service providers accessing it through open APIs under strict audit trails. This enables secure and auditable sharing of data with third-party providers.



The **applications layer,** known as the Utility Intelligence Platform (UIP), supports real-time analytics, tariff simulation, peer-to-peer energy trade, demand response, and mobile-based consumer tools. This modular design enables innovation while adhering to shared standards.

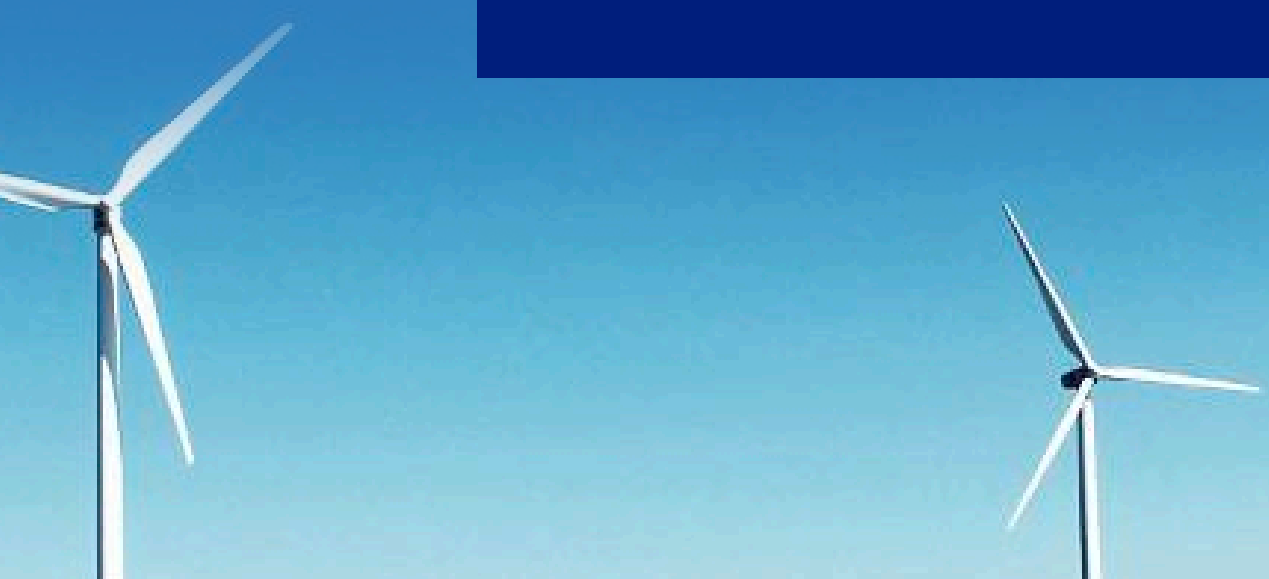
[19] Ministry of Power. (2022). Electricity (Promoting Renewable Energy through Green Energy Open Access) Rules, 2022. [20] Gazette of India. Ministry of Power. (2023). Carbon Credit Trading Scheme (CCTS) notification. Gazette of India. [21] Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) (Second Amendment) Regulations, 2025.

How the India Energy Stack Can Address India's Power Market Challenges

The IES addresses the systemic challenges discussed earlier such as fragmented data systems, weak consumer empowerment, and lack of analytical tools for utilities by:

- Creating persistent digital identities for consumers and assets
- Enabling consent-based data sharing to unlock personalised services
- Providing utilities with a shared analytical layer for forecasting, simulations, and outage management
- Lowering entry barriers for developers and innovators through open APIs and sandbox environments
- Enabling DISCOMs to upgrade legacy systems through a phased integration

IES thus seeks to replicate the transformative success of UPI in the power sector: reducing friction, increasing transparency, and creating exponential value through network effects.



Real World Applications

Case Study 1

MSME Cluster Virtual Power Plant - Beating Peak-Hour DSM Penalties

An MSME cluster agrees to a simple rule: During tight evenings, we'll briefly reduce or shift some loads. The programme coordinates Battery Energy Storage System (BESS) discharge and low-priority load cuts, proves delivery, and pays out fairly. The cluster's DSM penalties fall sharply.

The Problem

Peak-hour pain: Evening spikes trigger DSM charges for many MSMEs at once.

No coordination: Everyone acts alone; some over-comply, some under-comply.

Distrust in payouts: "Did my neighbour really shed? Why did I get less?"Why this happens: No shared baselines, no trusted verification, different hardware, and no neutral system to prove who did what.

The IES solution

Month 1: The cluster signs up to a Flexibility Programme. Each MSME picks simple rules (e.g., shed up to 8% for ≤60 minutes if price/penalty > ₹X).

Live events: A 10-minute heads-up arrives; some sites discharge BESS, others pause non-critical loads; each event is timestamped.

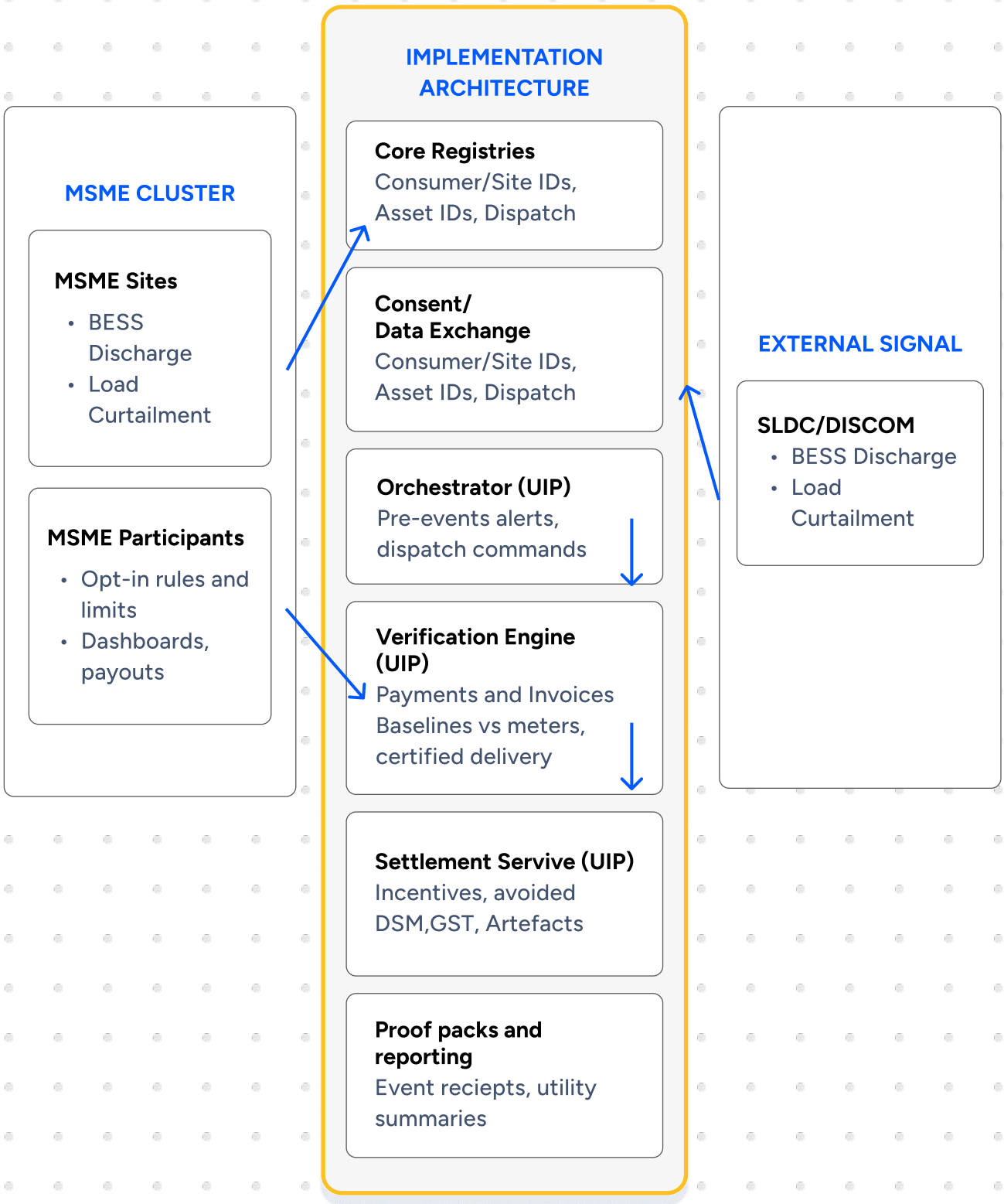
After each event: A system of records trace is shared with every participant (what you committed, what you delivered, how much you earned). Payouts are automatic and transparent.

What runs in the background

Core Registries: Device capabilities per MSME; signed event records with participants, baselines, delivered kW.

Consent/Data Exchange: Granular scopes (telemetry vs control); privacy-preserving summaries to DISCOM/SLDC.

Utility Intelligence Platform (UIP): VPP/DERMS orchestration, a verification engine (triangulates feeder and site meters), and a settlement service (GST-ready).



MSME Cluster VPP for DSM

Outcomes

15–25 MW aggregated, dispatchable flexibility (mix-dependent).

DSM penalties ↓ 30–50% in tight months.

Better feeder reliability and fewer customer complaints.

Case Study 2

Digital VPPA + Verifiable Green Claims + Finance that Rewards Performance

A pharma manufacturer buys green power virtually through a Virtual Power Purchase Agreement (VPPA) and physically (small Open Access tranches). Every verified MWh mints an hourly "green token" visible to auditors. A lender reads the same record and lowers interest whenever verified green usage hits the target.

The Problem

Are we really green? Certificates arrive late, formats vary, and auditors ask for proof.

Messy settlements: Financial VPPAs are hard to net out against actual consumption.

Finance doesn't trust slides: Banks prefer verified data, not PowerPoints.

Why this happens

Proofs live in different systems, timestamps don't match, and there's no trusted, consistent trail from generator meters → schedules → buyer usage.

The IES Solution

Month 0–1: The company shortlists wind–solar hybrids on a marketplace and signs a 7-year, 25 GWh VPPA plus small OA in two states.

Month 2–3: As the plant generates, the company's Green Ledger fills with hour-stamped tokens (net of losses) tied to meter evidence.

Quarter-end: The auditor gets read-only access and signs off market-based Scope 2.

Next quarter: The bank connects read-only; if verified green use beats the threshold.

What the process looks like to the consumer

Month 0-1
Sign VPPA + OA

→

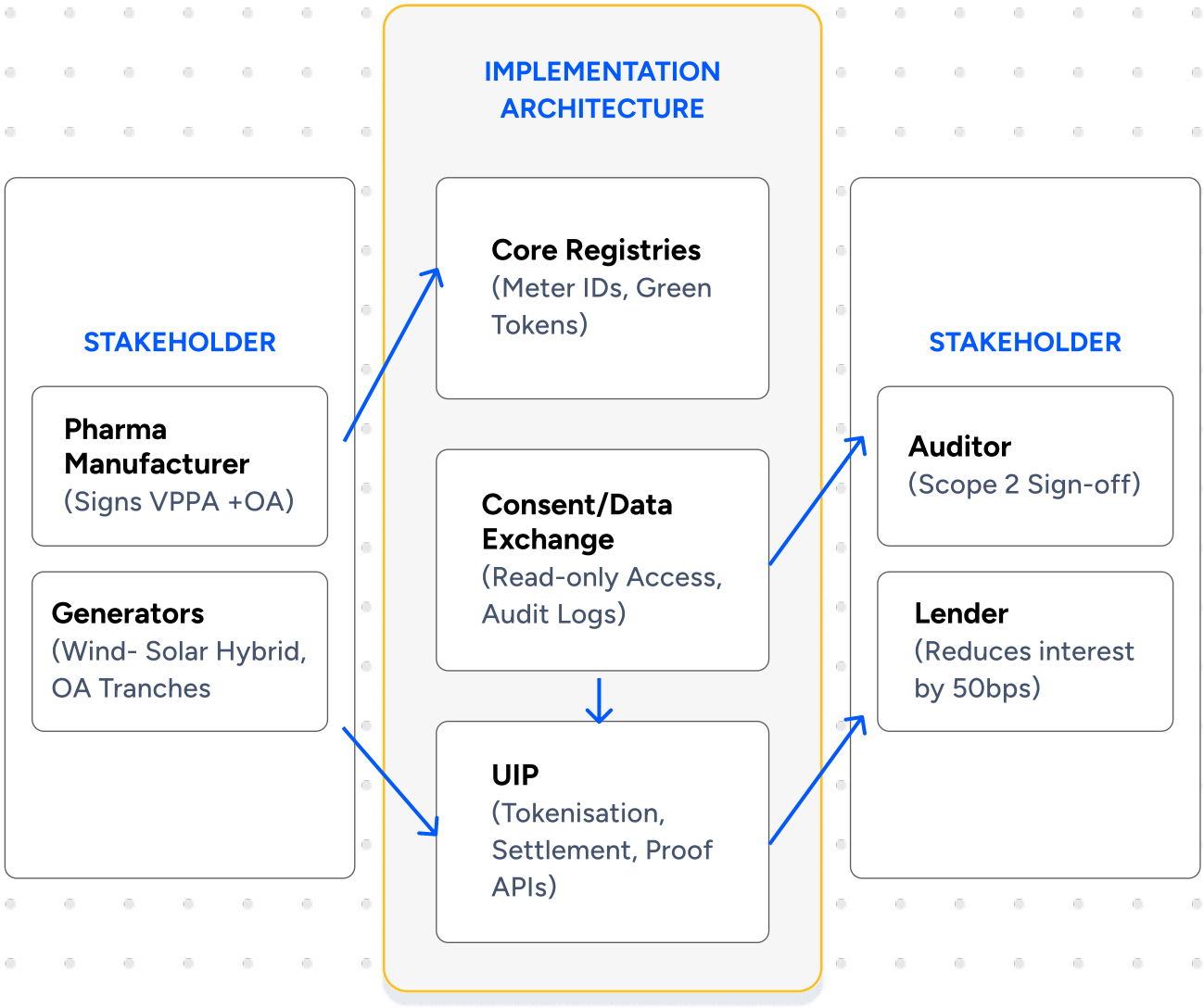
Month 2-3
Green Tokens Minted
Ledger Populates

→

Quarter-end
Auditor Verifies
Scope 2

→

Next Quarter
Bank Connects
Interest Drops



Digital VPPA, Verifiable Green Claims & Finance Linkage

What runs in the background

Core Registries: plant/meter identities and a transaction log that mints serialised green tokens per verified MWh.

Consent/Data Exchange: time-boxed, read-only access for auditors/ lenders; every access is logged.

Utility Intelligence Platform (UIP): tokenisation & matching (prevents double-counting), a settlement bridge to ERP, and assurance APIs (machine-readable proofs).

Outcomes

Hour-level verifiability of green use at scale.

Audit friction reduces, cost of capital goes down through performance-linked terms.

Clean, comparable claims across sites and states.

The Implementation Roadmap

The Ministry of Power has initiated the implementation of IES through a dedicated Task Force, anchored by REC and supported by FSR Global. The first phase (2026-2027) pilots are currently underway in Delhi and UP. Further pilots are set to begin in Gujarat, Andhra Pradesh and Mumbai[22]. These will test the UIP, asset registries, and open APIs, with a strong emphasis on data governance.

Based on pilot learnings, a national rollout is expected from 2027[23], supported by DISCOM onboarding programmes, regulatory alignment, and the creation of an innovation sandbox. IES will eventually integrate with complementary digital systems such as the Indian Carbon Market, the Green Credit Programme, and a potential Digital Electricity Exchange.

The India Energy Stack and Its Implications for Commercial and Industrial (C&I) Consumers

C&I users account for over 50% of electricity consumption in India and are pivotal to the energy transition[24]. Yet they remain constrained by high tariffs, complex procurement mechanisms[25], and limited data access. IES promises a structural shift in how C&I consumers manage and optimise their energy use.

1. Greater Visibility into Energy Costs and Performance

Through real-time APIs and digital IDs, businesses can consolidate data across sites and jurisdictions, benchmark efficiency, and model tariff scenarios.

2. Simplified Green Power Procurement

IES will allow for digitally verifiable green energy procurement, enabling easier participation in Open Access, virtual PPAs, and ESG compliance.

3. Enhanced Portability and Choice

A standardised consumer interface and portable ID structure can enable future supplier switching, grievance tracking, and tariff optimisation.

[22] REC, & FSR Global. (2024). India Energy Stack Task Force: Interim report. [23] REC, & FSR Global. (2024). India Energy Stack Task Force: Interim report. [24] Institute for Energy Economics and Financial Analysis. (2023). C&I tariffs and competitiveness in India. [25] Central Electricity Authority. (2023c). Load generation balance report 2023–24. Government of India.

4. Access to Energy-Linked Financing

With granular consumption and asset data, financial institutions can develop new products like performance-based lending or Energy Service Companies (ESCOs) for MSMEs.

5. Better Reporting and Regulatory Compliance

Automated, API-based data access can streamline Scope 2 emissions reporting, audit trails, and internal sustainability dashboards.

6. Enables Market Access for Smaller Businesses

By digitising the delivery of electricity services, it also broadens market access, allowing smaller businesses to participate in procurement and management models that were previously restricted to larger corporates[26]. The India Energy Stack will rewire how value is created and exchanged in the electricity market. Early movers can shape standards, access new markets, and build trust with regulators and consumers. Whether as power producers, aggregators, financiers, or digital service providers, the private sector stands to gain by investing in IES-aligned capabilities.

International Analogues and Lessons

Globally, several regions have pursued digitally integrated electricity systems with varying degrees of success:

- **Europe:** The European Union's integrated electricity market operates on a unified digital backbone, enabling cross-border trading, transparent settlement, and harmonised scheduling. Platforms such as ENTSO-E's Transparency Platform demonstrate how common data architectures can increase efficiency and trust across jurisdictions[27].
- **Estonia** provides consumers with real-time control of energy usage and provider switching, anchored in a unified data architecture[28].
- **The United Kingdom** mandates data access through third-party platforms, enabling dynamic pricing and energy management tools[29].
- **California** has implemented DERMS platforms that coordinate distributed assets like rooftop solar and EVs as virtual power plants[30].

However, none of these models combine identity, consent architecture, and layered platform interoperability at the scale proposed by IES. India's approach offers the opportunity to leapfrog existing models by embedding these principles from the outset.

[26] Council on Energy, Environment and Water. (2023). Barriers to innovation in power distribution. [27] ENTSO-E. (2022). Transparency platform overview. European Network of Transmission System Operators for Electricity. [28] Estonian Competition Authority. (2022). Annual report on electricity market. Government of Estonia. [29] Ofgem. (2021). Data best practice guidance. Office of Gas and Electricity Markets, UK. [30] California ISO. (2022). DERMS integration roadmap. California Independent System Operator

Neufin Energy

Neufin Energy's Vision and Role

We serve as a bridge between energy consumers, developers, and regulators through:

1. Digitally enabled energy sourcing and analytics products
2. Interoperable contracts and billing platforms
3. Energy tracking and asset management through Lumen - our proprietary product
4. Pilot implementation, stakeholder onboarding, and innovation partnerships
5. Policy advisory and regulatory engagement

Neufin is building the applications layer that makes IES actionable for businesses.

Each of these applications directly aligns with stakeholder needs: enterprises gain simplified procurement and analytics, utilities benefit from interoperable billing and compliance tools, financiers access verifiable datasets for performance-based lending, and regulators receive transparent, machine-readable audit trails.

We are actively building applications in consent-based procurement, and virtual aggregation, all designed to plug seamlessly into the IES framework.

Conclusion

The India Energy Stack is not a distant policy idea. It is an upcoming, actionable blueprint for digital reform in the power sector. With institutional support, technical credibility, and a clear implementation roadmap, IES represents the next frontier in India's digital transformation.

For C&I consumers, the opportunity is to engage now by shaping standards, building IES-aligned capabilities, and positioning ahead of the 2027 national rollout. Those who build on it early will define how India's energy transition actually works and fulfill the vision of a transparent, decentralised and digitally empowered power sector for India.

Neufin Energy

About the Author

Neufin Energy is a tech-led energy retailer delivering clean, low-cost & flexible energy to India's mid-market businesses. Our mission is to make clean energy accessible and affordable at scale. Sitting at the intersection of technology, policy, and power generators, Neufin Energy simplifies the shift to low-cost, low-carbon energy. Neufin Energy offers the most flexible and affordable path for C&Is to procure renewable energy pan-India through our Structured Electricity Contracts, developed in partnership with leading power generators and compliant with state-specific regulations. Neufin's energy tracking and asset management platform - Lumen, streamlines tracking and generation, bringing total visibility and control over how electricity is managed, paid for, and audited. The result is lower power costs, cleaner energy, and easier compliance with clean energy targets and supply-chain requirements like CBAM-linked disclosures. Neufin Energy also collaborates with corporations and government bodies to identify and address bottlenecks to accelerate renewable energy adoption across the country.