White Paper

VIETNAM RENEWABLE ENERGY INTEGRATION THROUGH "ROUND THE CLOCK" CLEAN POWER MECHANISM



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EXECUTIVE SUMMARY

KEY MESSAGES

1. **Vietnam's key challenge is when renewable power is delivered.** Peak demand grew 11.1% in 2025, more than twice as fast as overall demand. The peak is in the evening, after the solar output drops. On record days, coal plants have little spare capacity left, and during the dry season, diesel plants become necessary.
2. **Current prices and contracts are based on volume only.** Feed-in tariffs and utility contracts subject to government price ceilings pay renewable energy generators the same price at any time of day. Most direct power purchase agreements (DPPAs) also fix a contract price that does not vary by delivery hour, though they settle against 30-minute wholesale prices. Solar plants with batteries get a higher ceiling price, but it is the same at any hour. There is no extra reward for discharging during the evening peak.
3. **Vietnam's market, storage, and certificate systems are not yet linked.** The wholesale market settles every 30 minutes, the DPPA links buyers to those prices, and Renewable Energy Certificates (REC) are already traded. Vietnam's power plan also targets 10.0–16.3 GW of battery storage. Yet, currently, clean power cannot be contracted, delivered, paid for, and verified in time.
4. **Round-the-clock (RTC) contracts with delivery obligations would target the evening peak.** This paper proposes a new RTC contract with a 90% delivery requirement in every 30-minute block from 17:30 to 22:30. Shortfalls would carry a penalty of 1.5 times the tariff. A voluntary first round of up to 600–660 MW, bought by Vietnam Electricity's trading arm (EVN-EPTC), could test the model.
5. **Corporate DPPA buyers pay more when solar output falls and cannot prove when clean power was used.** DPPAs settle every 30 minutes, so the time of delivery affects costs. Solar-based contracts can produce more than the buyer needs at midday, and that surplus earns only the wholesale price. In the evening, when there is no solar, the buyer pays the retail rate, which, at peak, is more than twice the average wholesale price for large industrial users. The DPPA already produces 30-minute matching data, but no certificate in Vietnam carries it. Adding time-stamped generation data to existing Renewable Energy Certificates (such as I-REC, TIGRs), under EnergyTag's Configuration 3, would fill this gap.

Vietnam has built one of Southeast Asia's largest and fastest-growing power systems. It ended 2025 with 87.6 GW of installed capacity, including 24.5 GW of renewables. On a generation basis, it already leads the region in variable renewable energy. The challenge now is when that capacity delivers. In 2025, peak demand grew 11.1%, while overall demand grew 4.6%. The system set a new record of 58,456 MW on 24 June 2026. That peak falls in the evening, after solar hours, and solar output has fallen by around 4,000 MW within a single hour. Adding more solar and wind to today's volume-based contracts will not close this timing gap.

This EnergyTag White Paper assesses how Vietnam's evolving electricity market can support renewable integration and round-the-clock (RTC) clean power. It also explores how corporate buyers can establish credible, time-matched clean-energy claims. RTC clean power is a contractual supply arrangement combining renewable generation, storage, and other flexible resources to deliver a firm profile. Unlike individual renewable generators, it provides dispatchable power across defined time periods. RTC contracts do not require 100% clean electricity generation every hour. RTC supply enhances Vietnam's grid operations while reducing cost: firm, dispatchable renewable procurement directly solves the evening peak and steep solar ramps the system already faces.



WHERE VIETNAM STANDS

Vietnam is relatively advanced in market granularity compared to many of its regional peers. Wholesale settlement already operates on a 30-minute interval, and the direct power purchase agreement (DPPA) links these prices to corporate buyers through a contract for differences. Additionally, the revised Power Development Plan VIII raises the 2030 battery storage target to 10.0 to 16.3 GW, alongside active market reform. Connecting these frameworks will enable contracting, delivering, and verifying renewable generation by location and delivery time.

Several gaps recur across the analysis.

- **Prices and contracts pay for volume:** Existing price ceilings and many bilateral DPPA prices do not explicitly reward delivery during evening peaks; and Vietnam Wholesale Electricity Market (VWEM) prices vary by trading interval, but this price signal alone does not create a firm clean-power delivery obligation.
- **The storage premium rewards installing a battery rather than discharging it when the system is short:** Battery storage is not yet recognised as a distinct asset class, so control, dispatch, settlement, and remuneration remain unresolved, particularly within a DPPA.
- **Utility-scale solar has effectively stalled, with only 586 MW added in 2025.** Rooftop solar has become systemically significant, with surplus sales of up to 50% of its total electricity output. The system operator is expected to have full visibility under the provincial supervision of rooftop solar installations within their jurisdictions, but this is still a work in progress.
- **Lack of granular certificate framework:** Although the 30-minute settlement produces interval-level matching data, Vietnam has no granular certificate to turn that data into a verifiable clean-power claim.

SOLAR AND WIND OUTPUT DROPS EVERY EVENING JUST AS POWER CONSUMPTION PEAKS

Vietnam's power system at 30-minute resolution: 2026 day-to-day range (10th to 90th percentile), average day, and busiest day (24 June).

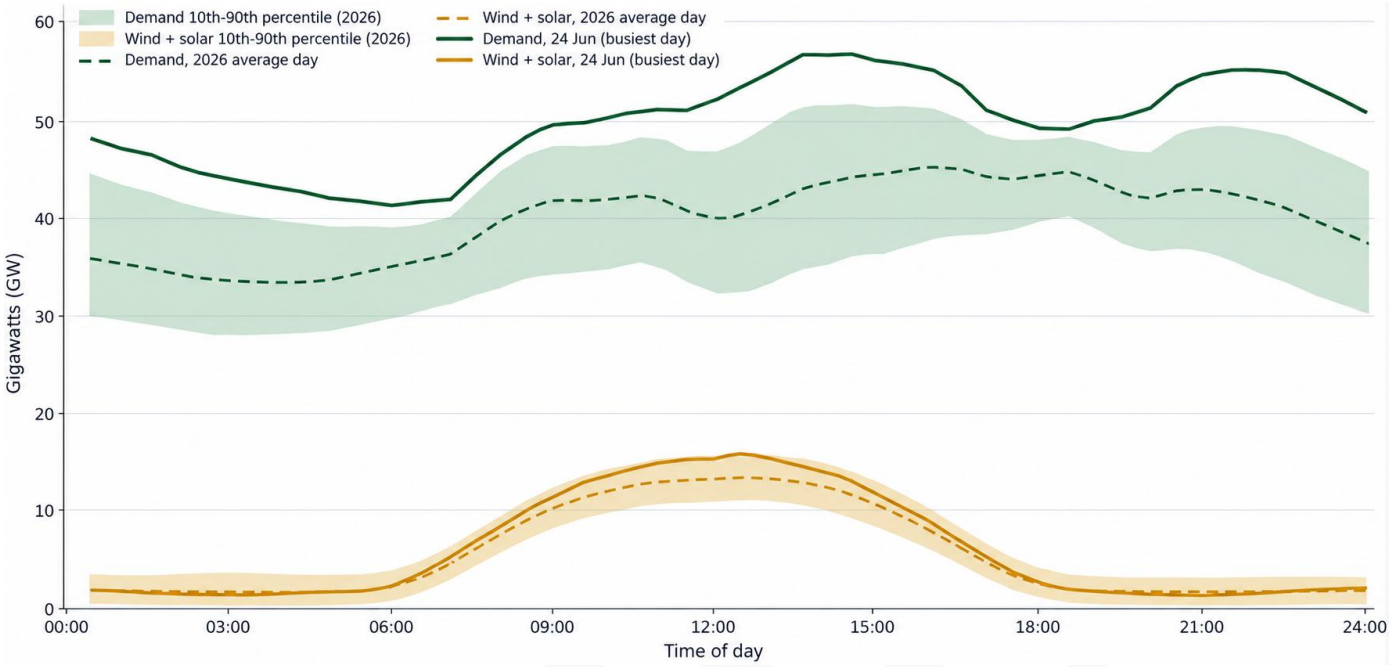


Figure 1. Evening demand in Vietnam cannot be met by wind and solar generation

Source: XanhTerra analysis of NSMO 30-minute production data.

CONVENTIONAL VERSUS RTC CLEAN-POWER PROCUREMENT

Table 1 shows how RTC clean-power procurement differs from conventional renewable procurement across the dimensions that matter for system value, cost, hedging, and clean-energy claims.

Aspect	Conventional renewable electricity procurement	RTC clean-power procurement
Procurement objective	Procures renewable electricity primarily against an annual or aggregate energy-volume requirement.	Procures a defined clean-power delivery profile, with performance obligations across specified time periods or intervals.
Generation profile	Relies only on individual variable renewable assets, such as solar, wind or biomass.	Combines complementary renewable sources, storage and other flexibility resources to shape a firmer supply profile.
System performance	Hurts system performance by increasing the need for system-level flexibility. Supports the afternoon peak period but is not dispatchable.	Supports system performance by providing dispatchable power during peak periods in the afternoon and the evening. Reduces need for flexible services.
Flexibility & storage	Storage is not required to meet an annual renewable-energy volume target.	Storage and portfolio diversification to manage delivery shortfalls and increase firmness.
Cost & complexity	Generally simpler to structure, contract and administer.	More complex to structure and potentially more expensive upfront, but may provide greater delivery certainty, arbitrage value and a stronger hedge.
Commercial / hedge profile	A large standalone solar PPA may leave the buyer exposed during non-solar hours and may face daytime price cannibalisation as solar penetration increases.	A shaped or storage-backed portfolio can shift delivery towards higher-value periods, potentially improving the hedge profile and reducing exposure to solar price cannibalisation.
Hourly/granular matching	Annual procurement may leave significant temporal mismatches between renewable generation and electricity consumption.	Enables hourly or sub-hourly matching when combined with interval data and appropriate tracking but does not automatically constitute an hourly matching claim.
Data & verification	Existing annual Energy Attribute Certificate (EAC) arrangements may be sufficient for conventional annual renewable-energy claims.	Allows for more granular measurement of delivery performance; granular claims require credible interval data, attribute tracking and verification.
Clean-energy claim for corporates	Supports conventional annual renewable-energy claims where applicable requirements are met.	RTC procurement alone does not automatically support an hourly clean-energy claim; this depends on the matching, tracking and verification framework used.

Table 1. Conventional renewable procurement vs. RTC clean-power procurement

Source: XanhTerra.

International experience confirms the direction of travel:

- India's Solar Energy Corporation of India (SECI) uses obligation-based RTC tenders with minimum delivery ratios in defined blocks.
- Australia's five-minute settlement and storage reforms reveal the market value of flexibility.
- Taiwan is building granular matching on top of interval metering.
- China is assembling the components of RTC from the bottom up.

Each offers transferable lessons rather than direct templates for Vietnam.

WHY THIS MATTERS

Demand for time-matched clean power is being driven by both system needs and external requirements. Continuous-load buyers such as data centres and manufacturers are least well served by a solar-only profile, yet no procurement product currently corresponds to their consumption.

BRIDGING THE GAP FOR VIETNAM'S ROUND-THE-CLOCK CLEAN POWER

Vietnam already has the building blocks for round-the-clock clean power. The task is to connect them.

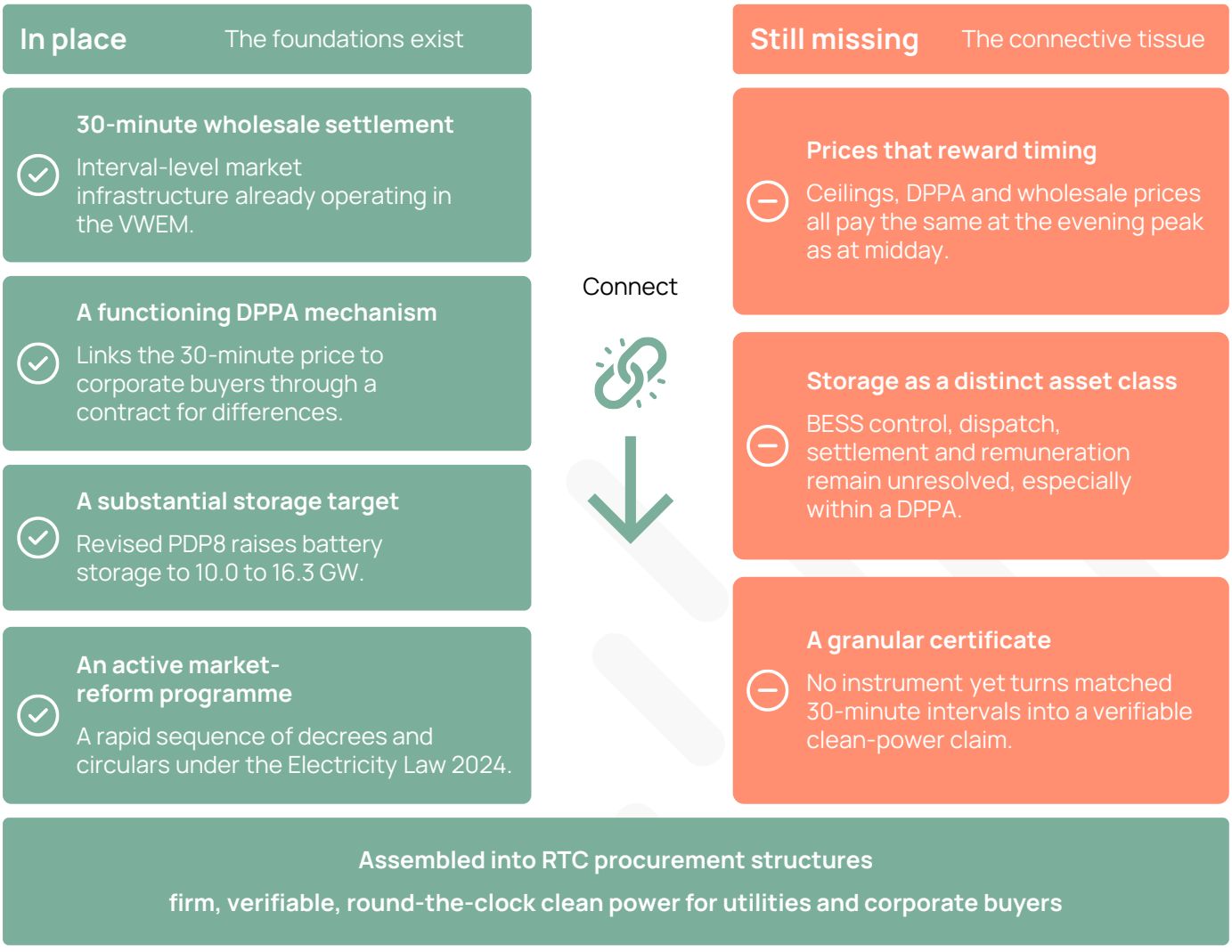


Figure 2. Vietnam's building blocks for round-the-clock clean power

Source: XanhTerra.

Exporters face the EU Carbon Border Adjustment Mechanism (CBAM), which entered its definitive phase on 1 January 2026. Vietnam's largest exposure is iron and steel, with more than EUR 2.2 billion exported to the EU in 2024. Indirect emissions from purchased electricity are not yet within CBAM scope for iron and steel, so clean-power procurement supports Scope 2 reporting, customer requirements, and hedging today. However, CBAM could extend to these indirect emissions over the longer term. The GHG Protocol Scope 2 revision and growing corporate 24/7 carbon-free energy commitments point the same way.

THE WAY FORWARD

The recommendations are organised around three routes and sequenced across near, medium, and long term:

- **Policy and institutional route:** Government decrees and Ministry of Industry and Trade (MOIT) circulars under the Electricity Law 2024 must define RTC clean power, delivery intervals, demand-fulfilment ratios, and penalties.
- **Utility route:** Vietnam Electricity (EVN) procures firm, time-matched clean power, starting with a voluntary demonstration using the existing 30-minute market rather than requiring a shorter interval.
- **Corporate route:** DPPAs to include RTC suppliers and portfolio contracts, and adding a granular certificate layer to the existing REC framework under EnergyTag Configuration 3 supports corporates who want 24/7 Carbon Free Energy (CFE).
- **Voluntary and progressive approach:** Allowing buyers to disclose an interval-matching score at 30-minute resolution and improve it over time
- Reuse Vietnam's existing settlement, metering and certificate infrastructure rather than duplicate it.

Recognising battery storage as a distinct asset class is the foundational step, since the dispatch, settlement and metering rules that follow have nothing to attach to until storage has a defined legal identity. Market-signal reforms in Chapter 2, principally bringing the adopted Decision 963 time-of-use windows into billing and completing the two-component tariff, and the data-access measures in Chapter 5, principally publishing curtailment statistics and opening interval data, are preconditions for both routes and among the cheapest, highest-leverage steps available.

Taken together, these steps would let Vietnam convert a deployment success into a system that values clean power by when and where it is delivered, giving both utilities and corporate buyers a credible route to firm, verifiable, round-the-clock clean power.



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LIST OF ABBREVIATIONS

Abbreviation	Full Term
BESS	Battery Energy Storage System
CBAM	Carbon Border Adjustment Mechanism
CfD	Contract-for-Difference
CFE	Carbon-Free Energy
DFR	Demand Fulfilment Ratio
DPPA	Direct Power Purchase Agreement
EAV	Electricity Authority of Vietnam
EPTC	Electric Power Trading Company
EU	European Union
EV	Electric Vehicle
EVN	Vietnam Electricity Corporation
FDRE	Firm and Dispatchable Renewable Energy
FiT	Feed-in Tariff
FMP	Full Market Price
GHG	Greenhouse Gas
IEA	International Energy Agency
I-REC	International Renewable Energy Certificate
MOIT	Ministry of Industry and Trade
NSMO	National Electricity System and Market Operation Company Limited
PCs	Power Companies
PDP8	National Power Development Plan VIII
PPA	Power Purchase Agreement
RE	Renewable Energy
REC	Renewable Energy Certificate
RTC	Round-the-Clock
SECI	Solar Energy Corporation of India
TIGR	Tradable Instruments for Global Renewables
VAT	Value Added Tax
VWEM	Vietnam Wholesale Electricity Market

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01.

BACKGROUND: ROUND-THE-CLOCK (RTC) CLEAN POWER

CHAPTER SUMMARY: WHAT RTC CLEAN POWER IS

RTC clean power is a contract to deliver clean electricity to a set profile across defined time periods. It combines renewables, storage, and other flexible resources, and does not require 100% clean power every hour. This chapter explains how it differs from conventional procurement. It also outlines the benefits for Vietnam's grid and for large electricity buyers.

Clean and renewable power is not always available when the power system or a customer needs it, because of the intermittent, variable nature of solar and wind power generation. This is the nature of renewable resources. The Vietnamese power system demand peaks in the evening (after solar hours), and the peak demand is growing faster than overall electricity demand. Solar generation, both grid-connected and behind-the-meter, is also expected to grow faster than onshore and offshore wind generation. To address the challenges of variable renewables, Vietnam has already laid two important foundations:

a) Increasing the use of grid-connected battery energy storage systems (BESS)

b) Strengthening and completing the vietnam wholesale electricity market (VWEM), which already operates with 30-minute trading and dispatch intervals.

As variable renewables grew over the past six years, Vietnam's five distribution Power Companies (PCs) relied entirely on the National System and Market Operation Company Limited (NSMO) for system balancing. NSMO has maintained system stability using flexible hydropower, thermal power plants owned by EVN Generation Companies, and emerging grid-connected storage such as BESS and the Bac Ai pumped hydro project.

However, there is another commercially viable, **firm, and time-matched** clean-power procurement option for Vietnamese utilities (EVN and the PCs) that has not yet been used. Large electricity users can use this procurement option under the Direct Power Purchase Agreement (DPPA) mechanism and eventually through the Vietnam Retail Electricity Market (VREM).

This paper evaluates **Round-the-Clock (RTC) supply procurement** in Vietnam. It shares international best practices, experiences, and offers recommendations for policymakers, utilities, and large corporations to support deployment.

ROUND-THE-CLOCK (RTC) SUPPLY

A Round-the-Clock (RTC) clean-power supply procurement is a contractual electricity-supply arrangement that establishes delivery or availability obligations **across defined time periods using a "hybrid generation" approach.** By hybridising renewables with storage and flexible resources, an RTC supply provides a firm, dispatchable profile. This contrasts with individual, variable renewable generators. An RTC supply contract does not necessarily require 100% clean electricity every hour. (See Table 1 in the Executive Summary for a comparison between Conventional Renewable Procurement and RTC Clean-Power Procurement).

The Ministry of Industry and Trade (MOIT) introduced an initial RTC model in national regulations. Decision 988/QĐ-BCT specifically regulates solar and BESS hybrids. However, an RTC supply encompasses broader clean technology combinations. Eligible options include wind with BESS; solar-wind-BESS options and floating solar paired with hydro or storage; any similar combination thereof.

The defining feature of RTC supply is not the specific technology mix. Instead, it is the capacity to deliver power during high-cost, peak-demand periods or when NSMO requires grid support. This paper argues for more flexible combinations of RTC supply procurement in Vietnam.

RTC SUPPLY FOR 24/7 CFE & CBAM

Annual RE matching remains standard practice globally. However, international buyers and Vietnamese exporters facing the EU Carbon Border Adjustment Mechanism (CBAM) are increasingly requiring hourly matched clean energy. Some of these companies also have a corporate decarbonisation goal based on matching electricity consumption with clean generation at increasingly granular time intervals,[1] the 24/7 CFE goal. Note that even under the 24/7 CFE goals, there will be time periods in which clean energy generation covers only part of its demand. The goal does not imply 100% renewable consumption in every single hour. As a procurement option, RTC supply can be one pathway towards achieving a 24/7 CFE goal.

Unlike utility-scale RTC supply, companies seeking hourly matching must prove clean-energy performance using granular certificates or verified interval data to substantiate their claims. Granular renewable energy certificates (RECs) are not yet available in Vietnam. While regulators evaluate granular RECs, companies can meet annual targets while progressively improving supply firmness and timing.

02.

VIETNAM'S POWER SYSTEM TODAY

CHAPTER SUMMARY: VIETNAM'S POWER SYSTEM TODAY

Vietnam had 24.5 GW of renewable capacity at the end of 2025. In 2025, peak demand grew 11.1%, more than twice as fast as overall demand. That peak falls in the evening, after solar output has dropped. On the record-demand day in June 2026, coal ran close to full output, leaving little room to cover the evening climb. Price ceilings, DPPAs, and the storage premium all pay for the volume of generation, with no reward for delivering during peak periods. The 30-minute wholesale market is a strong foundation, but storage still has no defined commercial role.

RENEWABLES IN THE VIETNAMESE SYSTEM: A DEPLOYMENT SUCCESS WITH AN INTEGRATION PROBLEM

Vietnam closed 2025 with roughly 87.6 GW of installed capacity, having added about 6.4 GW during the year. Coal accounted for 28.1 GW (32.1%), hydropower for 24.6 GW (28.1%), and renewables – solar, wind and biomass – for 24.5 GW (27.9%)[2]. On a generation basis, Vietnam is already among Southeast Asia's leaders in both total renewable and variable renewable energy shares.[3] In 2025, total generation reached 310.0 TWh: coal (48.1%), hydropower (33.0%), renewables (12.3%), gas (6.2%), and other fossil (0.2%).[4] (Figure 3) Including net imports, EVN reports total production and imports of 322.8 TWh for the year.

RENEWABLES ARE 27.9% OF CAPACITY BUT ONLY 12.3% OF GENERATION

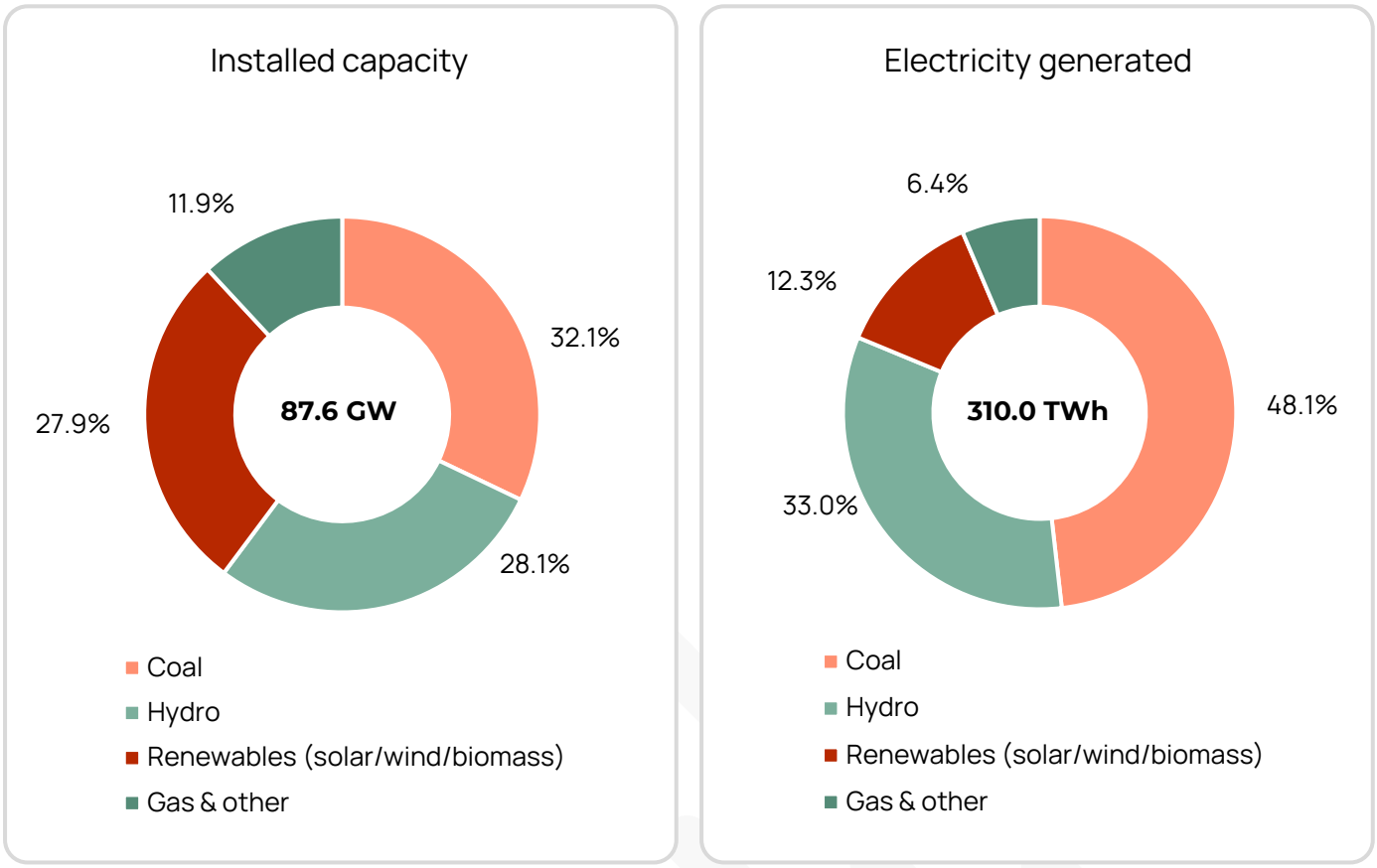


Figure 3. Vietnam's 2025 electricity mix by installed capacity and by electricity generated

Peak demand in Vietnam's power system has risen over recent years, emphasising the need for available peaking capacity. In 2025, electricity demand grew 4.6% while peak load grew 11.1%, to 54,370 MW – peak rose roughly two and a half times faster than energy.[5] This divergence continued in H1 2026 as demand rose 9.85%. On 24 June 2026, peak load reached a record 58,456 MW, with EVN forecasting 358.6 TWh total generation and imports for the full year (+11.1%).[6]

Vietnam's renewable electricity generation matches expected annual capacity factors. However, managing this variable output requires significantly greater system flexibility. This is a timing problem rather than a volume issue. The fleet meets annual generation expectations but fails to deliver when the system is short. NSMO recorded solar output dropping by 4,000 MW within one hour. This ramp exceeds the installed capacity of any single gas plant fleet in Vietnam. [7]

A 2023 Government Inspectorate finding questioned the feed-in tariffs provided to 173 projects (12 GW; USD 13 billion) due to a lack of Certificates of Construction Acceptance (CCA), leaving more than 100 projects at risk of losing preferential rates. A Prime Minister's Steering Committee is resolving these legacy cases. In 2026, MOIT asked 15 provinces to inspect 167 affected projects, while EVN proposed tariff reductions of up to 43% for pre-certification output and recovery of overpayments. EVN and developers must confirm tariff eligibility or negotiate revised contract prices. However, Vietnam is moving beyond the feed-in tariff era. Single, administratively fixed prices no longer serve as the basis for project revenue. Future revenue certainty will increasingly need to come from contracts that reward when electricity is delivered, not just the volume alone.[8,9,10,11]

Utility-scale solar has effectively stalled: total solar reached 19.25 GW at the end of 2025, but only 586 MW was added during the whole of 2025. [12]

Meanwhile, distributed rooftop solar has become systemically significant without becoming systemically visible. Across 2026 to date (January to August), utility-scale solar generated on average about 1,423 GWh per month, against roughly 1,193 GWh per month from rooftop solar (Figure 4), so rooftop has been running at about 84% of utility-scale output. This is consistent with 2025, when the two averaged about 1,248 GWh and 1,101 GWh per month, respectively (rooftop at about 88% of utility-scale).[13] The highest instantaneous solar output in any single half-hour was on 7 April 2026, at about 14,655 MW at 12:30 (7,515 MW utility-scale plus 7,140 MW rooftop). A growing resource of comparable scale to the utility-scale fleet now sits largely outside NSMO visibility and outside any settlement or certificate framework. These findings highlight Vietnam's integration problem. Visible utility-scale solar growth has stalled, while rapidly expanding rooftop solar remains invisible to the grid operators. Note that both solar fleets are currently non-dispatchable.

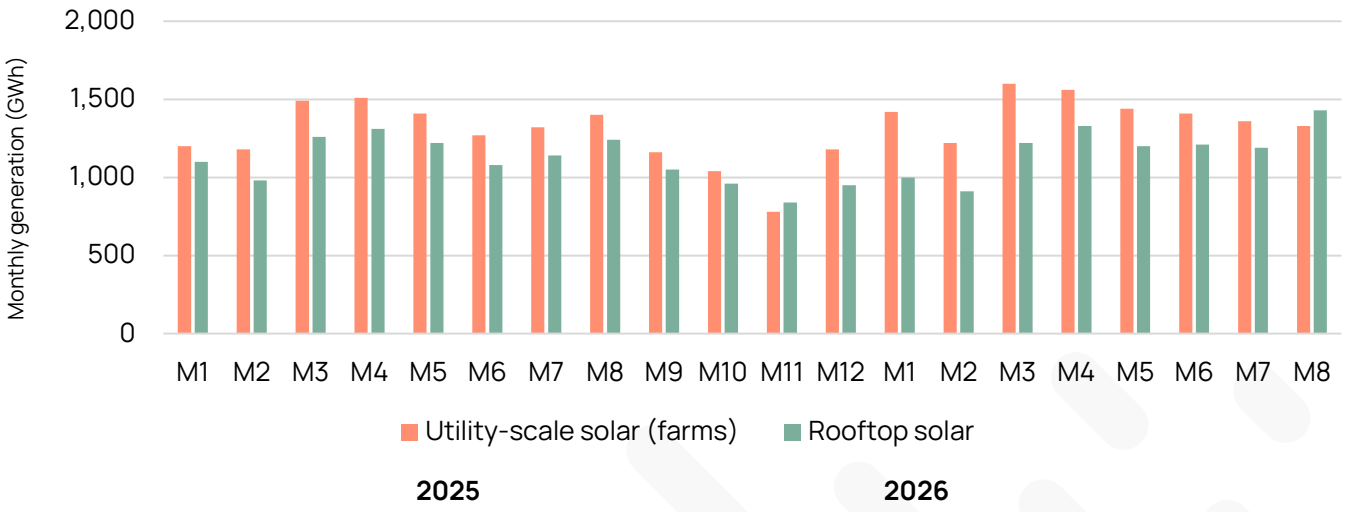


Figure 4. Rooftop against utility-scale solar generation by month (2025 and 2026)

OPERATING A SYSTEM WITH HIGH VARIABLE RENEWABLE ENERGY

According to NSMO's daily data, summertime electricity use is highest in the early afternoon - exactly when solar output is strongest. But once the sun goes down, demand stays high, and everything solar just covered has to come from somewhere else.

On the day with the highest peak demand in 2026 (24 June), the afternoon and evening peaks were more than seven hours apart: solar and wind supplied about a fifth of demand in the afternoon and almost none of it in the evening. Renewables, particularly solar, support the grid during morning and afternoon peaks. However, NSMO must still maintain high levels of firm, dispatchable evening capacity. See the relatively similar peaks on 24 June below in Figure 5.

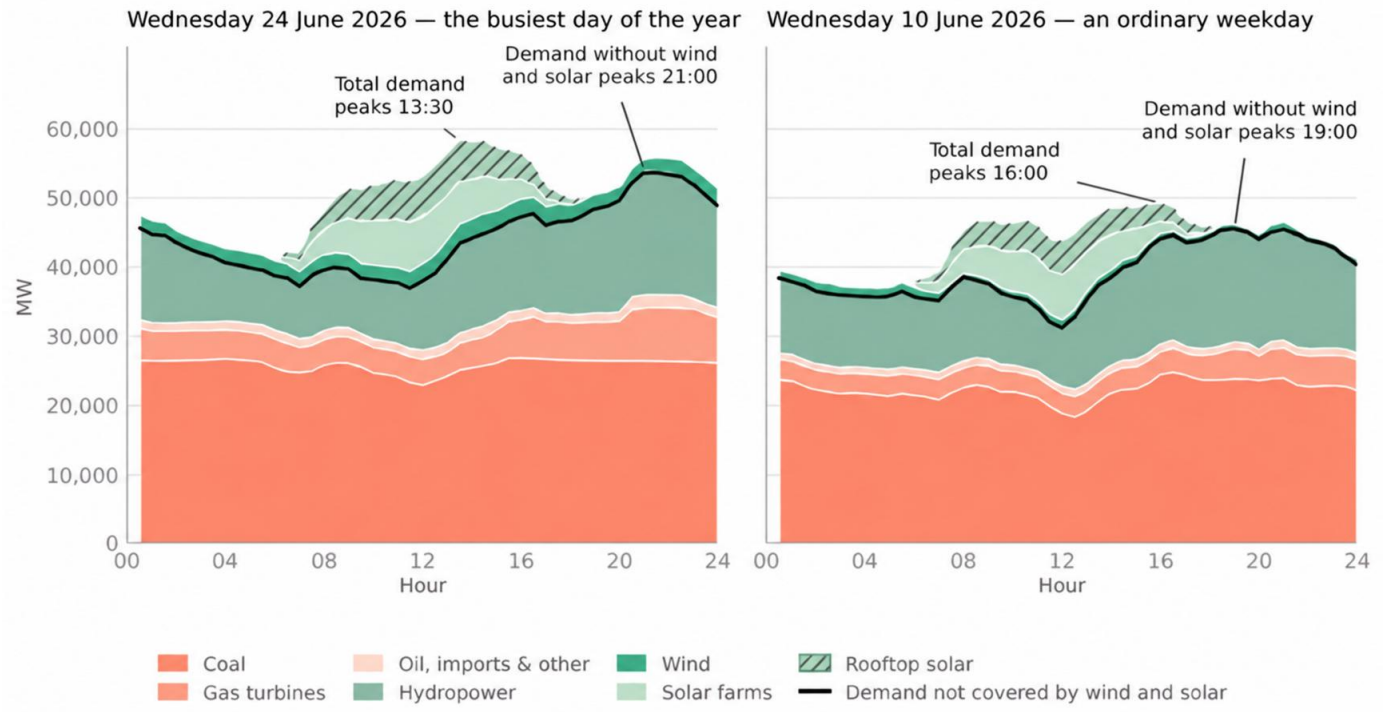


Figure 5. Electricity sources on the 2026 peak demand day versus an average weekday

Source: XanhTerra analysis of NSMO daily reports.

Only a few resources can fill that evening gap. Hydropower, coal, and gas supply most evening energy. On peak days, NSMO also dispatches reserve oil units and imports additional electricity.[14] The challenge is when these options run short simultaneously.

On an average day, coal plants turn down at midday to make room for solar and turn back up at dusk. On a record day, they are already close to full output, so that room is gone – just when the evening climb is steepest. Furthermore, periods of solar and wind oversupply occur due to the flexibility constraints of the thermal power plants, which can result in curtailment of the cheapest resources.



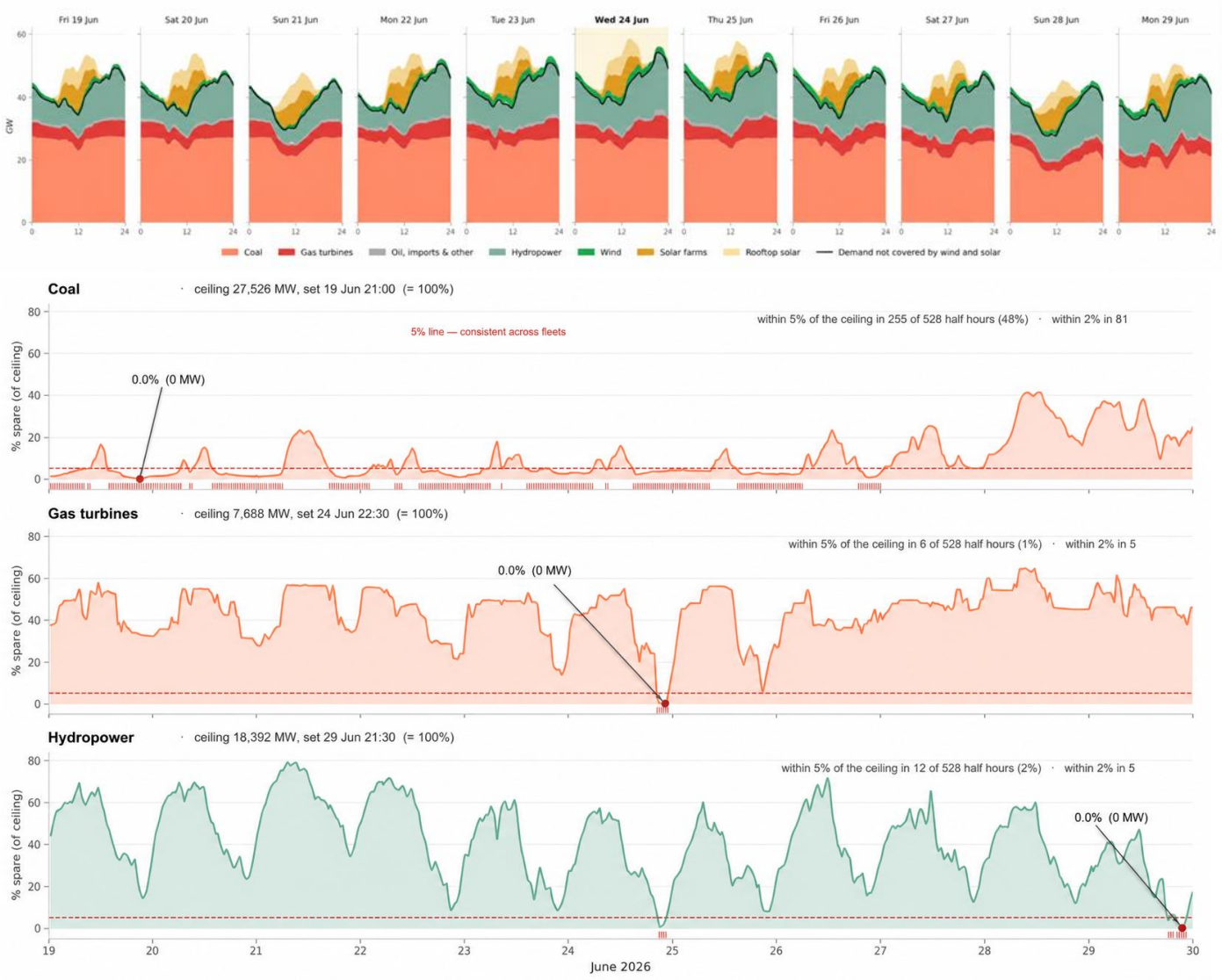


Figure 6. Analysis of the 11 days around the peak demand day in 2026

Headroom% = (ceiling - actual output) / ceiling. Ceiling = each technology's highest 30-min output within 19-29 Jun (= 100%). A single 5% line means the same on every panel (the earlier 1,500 MW line meant 5.4% for coal, 19.5% for gas, 8.2% for hydro). Red ticks mark half-hours within 5% of the ceiling; the labelled point is each fleet's tightest half-hour. Source: XanhTerra analysis of NSMO daily production reports.

Figure 6 shows the available "headroom" for coal, gas, and hydro during the 11 days around 24 June. Vietnam's coal fleet is heavily constrained. Output reached within 5% of maximum capacity in 48% of all half-hourly intervals across the period. Its curve hugged the 5% line for long stretches, meaning there was very little more coal to call on across much of the fortnight.

Gas turbines almost always held large relative headroom, a median of about 46% spare, dropping to the line only in a handful of evening peaks (6 half-hours within 5%). The single 0% touch is 24 June at 22:30, which is where the annual gas ceiling was set. Gas is run sparingly given the relatively high cost of generation.

Hydropower behaved similarly in relative terms, with a median around 42% spare, reaching the line only at a few evening peaks (12 half-hours within 5%), with its 0% point on 29 June at 21:30. This moment defines its in-period ceiling.

The IEA already ranks Vietnam ahead of every other Southeast Asian country in how far renewables have pushed its system, and the country is part of the way to what the IEA expects it to face in 2030.[15] Other countries run on much higher shares of renewables, provided the services the grid needs are agreed and paid for in advance, so there is no technical ceiling for Vietnam.[16] Adding more solar and wind on today's contractual terms doesn't help.

WHAT THIS MEANS FOR RTC.

RTC clean power addresses Vietnam's primary grid challenges. Firm, dispatchable procurement directly mitigates evening demand peaks and rapid solar ramp-downs. In Vietnam, RTC supply and the system need to point in the same direction. Table 2 in Chapter 4 compares system needs with RTC and traditional single-technology procurement, illustrating how RTC more effectively addresses clean-flexibility requirements that conventional approaches do not fully meet.

INSTITUTIONAL ROLES, HIGH-LEVEL POLICY AND REGULATORY LANDSCAPE

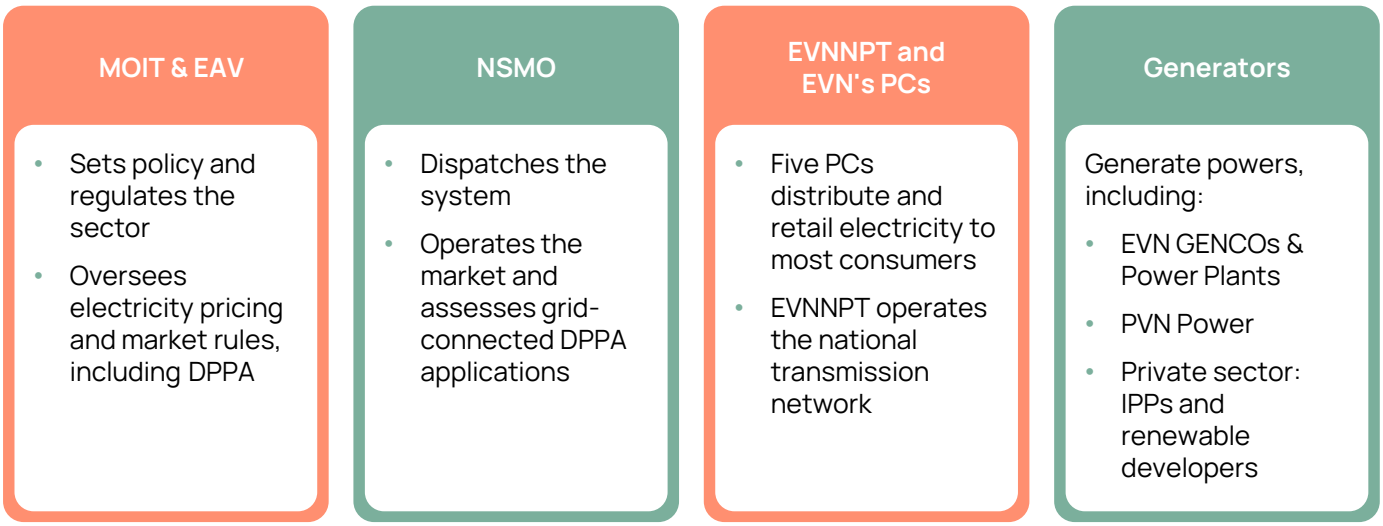


Figure 7. Institutional roles in Vietnam's power sector

Source: XanhTerra.

Vietnam has rapidly rebuilt the legal architecture of its power sector. The 2024 Electricity Law (No. 61/2024/QH15, effective 1 February 2025)[17] provides the enabling framework for the rapid sequence of decrees, decisions and circulars developed, discussed and promulgated over the past twenty months (see Figure 10 in Annex). The National Assembly enacts the primary legislation, including the Electricity Law 2024, and the Government (led by the Prime Minister's Office) issues the Decrees made under it. However, the key policy agent for the Vietnam energy sector is the Ministry of Industry and Trade (MOIT), with its Electricity Authority of Vietnam (EAV) leading much of the work. MOIT issues implementing circulars and approves the tariff and price-bracket frameworks. The National System and Market Operation Company Limited (NSMO) operates the power system and the electricity market, dispatches storage, and holds the settlement-grade interval data. Vietnam Electricity (EVN) currently controls both the transmission and distribution utilities.

The EVN Power Companies (PCs) remain the principal off-taker and distribution utility, and are currently the main developer of grid-scale storage. Generation is more diverse, with several different state-owned and private sector entities.

The revised Power Development Plan VIII (Decision 768/QĐ-TTg, 15 April 2025) targets 183.3-236.4 GW of domestic capacity by 2030 and about USD 136.3 billion of investment in 2026-2030. Its largest proportional revision is battery storage, raised from 300 MW to 10.0-16.3 GW. It also directs utility-scale solar projects to include storage equal to at least 10% of plant capacity for two hours. This condition is implemented through project approval and offtake negotiation rather than as a directly enforceable standalone obligation. Figure 11 in Annex compares 2023 and revised targets. [18,19,20]

The wider framework has also evolved quickly:

- Circular 29/2026 replaces the wholesale-market rules.[21] Decree 57/2025,[22] amended by Decree 243/2026, governs DPPAs and expands eligibility to data centres, EV charging and industrial-park retailers;[23] The amendments also raise the permitted sale of rooftop-solar surplus to 50%.[24] Circular 17/2025 allows Power Corporations to recover reasonable storage investment and operating costs through the wholesale price, underpinning EVN's first grid-scale batteries. [25]
- Circular 62/2025 sets pricing frameworks for standalone storage of at least 10 MW. However, it excludes renewable-paired and Power Corporation-owned batteries.
- Circular 62/2025 sets the dossier, procedure, and method for determining and approving that price bracket rather than the bracket itself,[26] but MOIT had not issued the numeric bracket by early September 2026. Pricing for renewable-paired storage remains unresolved. EVN requested clarification from the Electricity Authority regarding control rights, installation purpose, and operational availability. [27]

HOW RENEWABLE ENERGY HAS BEEN PROCURED

RE procurement was rebuilt from scratch after the feed-in tariffs[28] lapsed. Between 2017 and 2021, the tariffs paid a flat price on every kilowatt-hour for twenty years, worth the same at noon as at eight in the evening. Fixed tariffs drove rapid deployment but failed as a system instrument. Flat pricing provided zero incentive to generate during high-demand intervals. Projects completed after the commissioning deadlines had no price at all until Decision 21/QĐ-BCT of 7 January 2023 set a transitional ceiling.

Renewable energy procurement today rests on three pathways:

- Annual generation price ceilings that frame a negotiation with EVN rather than fix a price,
- Direct contracting between a generator and a consumer through the DPPA, or
- Direct participation in the wholesale market.

All three pathways are settled volumetrically without providing a time signal. Replacing feed-in tariffs changed price setting without altering underlying incentives. Capacity buildout remains attractive, but incentives for peak-hour delivery remain absent.

Storage has also entered the generation-price framework. Decision 988/QĐ-BCT (April 2025) set a higher ceiling for solar-plus-storage projects meeting minimum parameters of 10% plant capacity, two hours of storage and discharge, and charging energy equal to 5% of plant output. In the North, the ground-mounted solar ceiling rises from 1,382.7 to 1,571.98 VND/kWh – an 11-14% premium across MOIT's brackets.

However, this premium rewards installation rather than performance: prices do not vary by delivery hour. Developers are therefore encouraged to install the minimum qualifying battery rather than capacity optimised for system need. The solar and wind generation price ceilings for 2026 were still unapproved in early September 2026, even though MOIT had by then issued the 2026 bracket for gas-fired generation, and the Ministry was consulting on replacing the three-region structure with economic-region or provincial brackets.[29] The relevant ceilings are set out in the Annex. [30,31,32,33]

WHAT THIS MEANS FOR RTC.

Vietnam has moved from fixed FiTs to negotiated prices, DPPAs, and wider wholesale-market participation. Incentives remain focused on volumetric generation rather than delivery timing. Furthermore, storage premiums reward battery installation rather than active discharge during peak demand.

HOW POWER IS TRADED AND SETTLED

Vietnam's wholesale electricity market (VWEM) has operated since 2019, and its settlement interval was cut from sixty to thirty minutes with effect from 1 September 2020.[34] Generators settle at the Full Market Price (FMP = System Marginal Price + Market Capacity Price). Circular 29/2026 retains this 30-minute settlement cycle. Interval-level market infrastructure therefore already exists.

To further develop granular RECs, additional time-resolved generation and consumption data are required to be linked to an attribute-tracking and verification framework. Yet, the VWEM is thin: as of early 2025, 112 plants participated directly in the VWEM, about 38% of national capacity and essentially unchanged from 38.8% in 2022 despite substantial fleet growth, with the remainder sold to EVN under bilateral contracts as the single buyer.[35] From 20 July 2026, Circular 29/2026 mandates direct participation for plants of around 30 MW and above while allowing hydropower and renewable plants of 10 MW and above to participate directly or indirectly. This is a significant near-term change to price formation because it widens the population of assets exposed to the thirty-minute price.[36]

Where the framework stops: the regulatory definition of BESS operation and use. Vietnamese rules currently recognise batteries only as a regulated cost or a system-dispatch resource.

- Circular 17/2025 permits cost recovery for Power Corporation batteries.
- Circular 62/2025 prices standalone storage serving national system needs;
- Circular 29/2026 brings BESS into day-ahead and intraday scheduling, dispatch, and automatic generation control. This frames storage as a system-operation function under NSMO.

The DPPA framework does not yet define that role. Decree 57/2025, as amended, recognises storage output as surplus electricity in the private-wire route, and amended Decree 58/2025 allows storage charged from rooftop solar to sell surplus. Existing decrees fail to specify battery control rights, charging rules, or energy attribution within DPPAs. Grid-connected amendments remain entirely silent on storage. Control rights, installation purpose, availability obligations, settlement and remuneration therefore remain unresolved for DPPA-linked BESS.

A clear regulatory definition of BESS operation and use is essential for RTC Clean Power procurement and for corporate DPPA procurement.

WHAT THIS MEANS FOR RTC.

VWEM already provides a 30-minute settlement, but market participation remains partial, and BESS rules still treat storage mainly as a system-dispatch asset. Commercial arrangements lack clear rules on battery control, charging, energy attribution, settlement and remuneration, particularly within a DPPA.

HOW POWER IS PRICED FOR RETAIL CONSUMERS

Vietnam's 30-minute wholesale signal currently stops at the retail boundary. Corporate buyers pay regulated three-block time-of-use tariffs rather than interval prices, and no certificate adds a timestamp to each kilowatt-hour. The average retail tariff has remained 2,204.07 VND/kWh since May 2025.[37] For industrial customers at 110 kV and above, the peak, normal, and off-peak rates are 3,266 VND/kWh, 1,811 VND/kWh, and 1,146 VND/kWh, respectively, compared with an average FMP of 1,423.5 VND/kWh in January-July 2024. Time-of-Use (TOU) tariffs provide an administratively defined arbitrage signal for storage, but they do not reveal interval-specific scarcity or renewable-system value. Tariffs by customer class are in the Annex. [38,39,40]



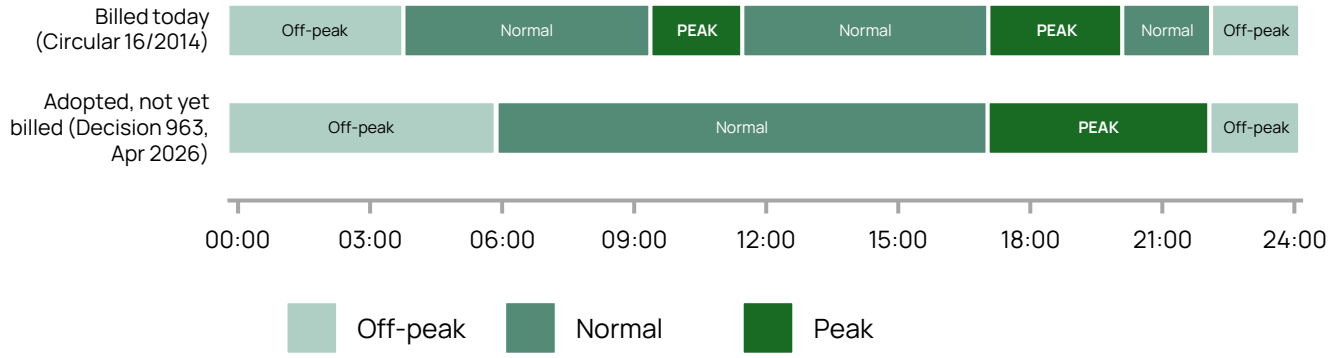


Figure 8. Time-of-use windows: Revised peak time is more aligned with renewable scarcity

Source: XanhTerra, based on MOIT Circular 16/2014 and Decision 963/2026.

Two retail reforms are pending. Decision 963/QĐ-BCT removes the morning peak, extends the evening peak to 17:30-22:30, and moves off-peak hours to 00:00-06:00. The Decision took effect on 22 April 2026 but had still not reached customer bills by early September 2026.[41] MOIT has since consulted on an amendment that would remove that condition so the new windows can be billed without waiting for a price change.[42] Separately, the Electricity Law mandates a two-component tariff combining energy and a demand charge based on the customer's highest half-hourly monthly demand. A paper pilot began in October 2025 for customers consuming at least 200,000 kWh per month, but the timeline for full implementation remained unconfirmed in early September 2026 (see Figure 8). [43,44,45,46,47]

WHAT THIS MEANS FOR RTC.

Retail pricing remains administratively time-banded rather than responsive to wholesale price. Pending time-of-use and two-component tariff reforms will improve cost signals. At the same time, the existing peak/off-peak spread already provides clear commercial incentive for storage for retail price arbitrage.



03.

INTERNATIONAL EXPERIENCE AND LESSONS

International experience shows that RTC procurement and granular electricity accounting cannot be delivered through a single reform. They depend on several mutually reinforcing capabilities, including temporal market signals, commercially viable flexibility, measurable procurement obligations, granular metering and attribute tracking, and rules that connect contractual claims with electricity-system data. The cases below are therefore selected for the distinct functions they illustrate rather than as direct comparators with Vietnam.

- India demonstrates how delivery obligations can convert variable renewables into firmer procurement products.
- Australia shows how short-interval market signals can remunerate flexibility.
- Taiwan demonstrates sub-hourly allocation and the interaction between granular meter data and certificate infrastructure.
- China illustrates an incremental transition towards market-based renewable pricing and more granular electricity evidence.

3.1 INDIA Approach: Obligation-based RTC renewable procurement	DELIVERY OBLIGATIONS
KEY DESIGN FEATURES	RELEVANCE TO VIETNAM
• RTC-IV tender (2025): 420 MW awarded at INR 5.06–5.07/kWh. The tender established the DFR-based model, requiring a minimum DFR of 80% annually, 75% monthly and 90% during peak hours. Shortfalls were subject to differentiated penalties, with stronger consequences for peak-period under-delivery. • FDRE-RTC-V tender (2026): 1,000 MW awarded at INR 5.25–5.26/kWh. Building on RTC-IV, it moved to delivery obligations in every 15-minute block: 90% in peak hours, 50–60% in solar hours, and 70% in remaining hours. Penalty (1.5 x tariff) for failing the DFR requirements is calculated at each 15-minute time period. • FDRE-RTC-V solar-hour treatment: Solar-hour output above the 60% maximum DFR is paid at only 50% of the PPA tariff if taken by the buyer. The developer may sell such excess elsewhere, subject to a day-ahead right of first refusal for SECI/the buyer. This discourages over-supply during lower-value solar hours while preserving an optimisation route for the developer. • Contract structure: Both tenders use long-term, standardised SECI contracts, with SECI acting as an intermediary procurer. FDRE-RTC-V provides a 25-year PPA, payment-security arrangements, and specified consequences for under-delivery, helping turn the delivery obligation into a financeable revenue framework.	• Start with a voluntary RTC clean-power demonstration, potentially through DPPA, using defined delivery windows that reflect Vietnam's system needs, such as the evening peak and midday solar-surplus periods. A 15-minute obligation is not necessary at the outset. • Allow developers to meet the obligation through a renewable portfolio, including wind, solar, storage, hydropower, biomass and demand response, while retaining the option for individual plants where they can deliver the required profile. • Use India's model as a direction of travel: value clean power by when it is delivered, supported by clear rules on measurement, scheduling, curtailment, payment security and consequences for under-delivery.

SOURCE Solar Energy Corporation of India (SECI), Request for Selection (RfS) for 1,200 MW RTC-IV; SECI, RTC-IV auction results and Letters of Award (26 May and 11 June 2025); SECI, RfS for 1,000 MW FDRE-RTC-V and Amendments 01–03 (10 March–25 June 2026); and SECI, FDRE-RTC-V auction results (6 and 14 August 2026).

3.2 AUSTRALIA Approach: Five-minute price signals and market revenues for flexibility	FLEXIBILITY VALUE
KEY DESIGN FEATURES	RELEVANCE TO VIETNAM
• The National Electricity Market moved from 30-minute to five-minute settlement in October 2021. • The 2024 Integrating Energy Storage Systems reforms introduced the Integrated Resource Provider category and Bidirectional Unit classification. • Batteries stack revenue: charge at low or negative prices, discharge at peaks, and reserve capability for Frequency Control Ancillary Services (FCAS). • Revenues are market-based rather than fixed, so they create commercial opportunity but do not by themselves guarantee bankable cash flows.	• In the initial phase, build RTC on Vietnam's existing 30-minute interval rather than making a shorter market interval a precondition. • Open storage and aggregators to transparent ancillary-service products and recognise bidirectional operation, reducing the premium an RTC buyer carries alone. • Design granular clean-power contracts alongside ancillary-service and spot-market obligations so the same capacity is not double-promised; stage market opening rather than replicate a mature spot market at once.

SOURCE Australian Energy Market Commission and Australian Energy Market Operator, Five-Minute Settlement (commenced 1 October 2021); and Australian Energy Market Operator, Integrating Energy Storage Systems reforms (implemented 3 June 2024), including the Integrated Resource Provider and Bidirectional Unit classifications.

3.3 TAIWAN Approach: Granular metering, physical delivery and certificate evolution	GRANULAR ALLOCATION
KEY DESIGN FEATURES	RELEVANCE TO VIETNAM
• 15-minute wheeling data are used to calculate the electricity physically matched under each contract. • Taiwan Renewable Energy Certificate (T-RECs) are issued in 1 MWh units (fractional issuance from January 2026) and do not carry interval-level timestamps. • Unmatched generation may be reallocated within the same time-of-use block, weakening strict interval-level alignment. • The Flexibility Allocation Pilot (October 2025-September 2026) lets retailers aggregate offtakers and allocate generation across meters within each 15-minute interval.	• Build a granular tier on top of existing REC and 30-minute market data rather than replacing the certificate system. • Vietnam relies on the externally governed I-REC, so data access, attribute ownership, and retirement rules need agreement among the market operator, data holders, the I-REC issuer, buyers, and verifiers. • A retailer or platform could pool DPPA buyers, allocate matched generation and issue a verified interval report ahead of a formal national hourly certificate, with clear rules on surplus, storage and assurance.

SOURCE Taiwan Power Company, renewable-electricity wheeling and direct-supply rules and the Green Power Market Flexibility Allocation Pilot (October 2025-September 2026); T-REC Center procedures; and EnergyTag, Taiwan power-sector and RTC clean-power report (2026).

3.4 CHINA Approach: Building RTC readiness through market, data and contracting reforms	EMERGING RTC FOUNDATIONS
KEY DESIGN FEATURES	RELEVANCE TO VIETNAM
• China's national Green Electricity Certificate (GEC) remains a monthly instrument without hourly timestamps, while Document No. 136 moves renewable generation and storage towards greater reliance on market-based value. • Shanxi has introduced five-minute settlement, while Shandong's negative daytime prices demonstrate the need for storage, flexible demand and renewable firming. • Jiangsu's 2026 rules allow hourly green power trading and retailer-provided hourly products. Jiangxi has operated a blockchain-based hourly trading and traceability system since 2025. • Zhejiang hosts a 20-year corporate PPA supplied by solar and offshore wind projects, although no firm delivery obligation has been disclosed. Inner Mongolia, Jiangsu, Xinjiang and Yunnan have approved more than 50 direct green power supply demonstrations, creating additional pathways for future portfolio-based procurement.	• Adapt China's incremental approach through nationally authorised demonstrations in selected industrial zones or buyer clusters, rather than waiting for a complete RTC market framework. • Build on Vietnam's existing 30-minute metering and settlement systems and the I-REC framework, adding more granular evidence only where required instead of creating a new national certificate system. • Test portfolio-based supply combining solar, wind, storage and other flexible resources, with clear rules for aggregation, scheduling, deviations, curtailment and verification.

SOURCE National Development and Reform Commission (NDRC) and National Energy Administration (NEA), Notice on Deepening the Market-oriented Reform of On-grid Tariffs for New Energy (NDRC Price [2025] No. 136) and Notice on Orderly Promoting the Development of Green Power Direct Connection (NDRC Energy [2025] No. 650); NEA, Implementation Rules for the Management of Renewable Energy Green Electricity Certificates (Trial) (Document No. 107, effective 2026); and EnergyTag and The Lantau Group, China Power Sector and Policy Landscape for Round-the-Clock Clean Power (2026).

TRANSFERABLE DESIGN PRINCIPLES FOR VIETNAM

1. **Define a measurable delivery obligation.** Contracts should specify the required delivery periods, eligible resources, performance thresholds, and consequences for under-delivery. An RTC label alone is not sufficient.
2. **Allow hybrid portfolio-based delivery.** Hybrid portfolios combining wind, solar, biomass, storage, and demand response should collectively satisfy delivery obligations. Individual assets do not need to perform independently.
3. **Create revenue pathways for flexibility.** Storage and other flexible resources should be able to recover value through firming payments, energy-market revenues, and system services as these mechanisms develop.
4. **Build on existing infrastructure.** Vietnam's 30-minute metering and settlement systems provide a practical foundation, while early pilots could use simpler delivery windows aligned with system needs.
5. **Establish clear delivery and verification rules.** The framework should define grid boundaries, data requirements, environmental-attribute ownership, storage losses, and controls against double counting.
6. **Start voluntarily and increase performance over time.** Initial pilots should apply achievable delivery requirements during selected periods, with performance expectations strengthened as data, market rules and portfolio capabilities improve.

04.

A PROPOSED RTC DESIGN FOR VIETNAM

CHAPTER SUMMARY

We propose that RTC suppliers deliver at least 90% of contracted power in every 30-minute block from 17:30 to 22:30. Shortfalls would carry a penalty of 1.5 times the tariff, and curtailment ordered by the system operator would count as delivered. The Electric Power Trading Company (EPTC), part of Vietnam Electricity (EVN), would buy the power. Prices would be set through the existing ceiling-price system. A voluntary first round of up to 600–660 MW could test the model. The first legal step is to recognise battery storage as a distinct asset class.

Based on international experiences, an RTC Clean Power mechanism in Vietnam can be designed using India's latest RTC tender requirements. This mechanism allows developers to sign contracts with EVN-EPTC. Facilities guarantee power delivery every 30 minutes based on demand fulfilment ratios (DFR), as in India. Vietnam's RTC Clean Power could simply first set a minimum DFR of 90% during every 30 min (VWEM trading period) from 17:30 to 22:30, designated by MOIT as the peak window.[48] It may also set minimum DFRs during solar and for hours outside of the peak periods, similar to India. However, the obligation for RTC clean power to provide a very high degree of reliable power during the peak period is central. Stricter penalties must enforce time-block obligations. Modelled on India, penalties can equal 1.5 times the RTC tariff, calculated per 30-minute block. The off-taker in Vietnam would likely be EVN-EPTC, and NSMO would provide priority dispatch for all available power from RTC Clean Power up to the contracted quantity from the RTC supplier. NSMO will dispatch RTC plants based on system needs. If NSMO curtails energy for grid security, that volume should count towards the DFR rather than as a failure, as this protects the supplier from being penalised for a system-operator decision. If the RTC supplier delivers power beyond the contracted capacity, NSMO can choose to dispatch it under VWEM rules, only if it aligns with system needs, and the project can receive VWEM payments for the excess. The NSMO must not "see" or control the individual plants inside the RTC; they only receive and manage the combined output of the RE and storage facility.

For scale, Vietnam can consider procuring RTC contracts of up to 600 – 660 MW, which is around the unit size of recent coal power plants. However, individual RTC contracts could be in the 50-200 MW range. This suggestion is based on India's SECI experience, which procured 1000 MW under its RTC V tender because:

I. 1 GW block was large enough to make a measurable impact on national grid planning, showing that renewables with storage can serve as a direct 1:1 replacement for large coal-fired stations (India's recent coal units are about 800 MW);

II. A 1,000 MW size was substantial enough to attract top-tier renewable developers and major battery energy storage system (BESS) suppliers, yet divisible (with individual allocations ranging from 70 MW to 300 MW across seven winning bidders) to foster healthy competitive bidding;

III. 1 GW block allowed SECI to successfully aggregate demand and discover highly competitive, low tariffs (INR 5.25 – 5.26/kWh) that compete favourably with new thermal power alternatives.

Similarly, RTC contracts of up to 600-660 MW in Vietnam can be substantial enough to attract investors and support the power system to meet the evening peak.



System need in Vietnam	Where a single-technology RE PPA falls short	How RTC Clean Power can respond
Evening peak of 17:30–22:30, growing about 2.5 times faster than energy demand	Solar delivers nothing in the block; wind output is uncorrelated with it and is not firm.	Delivery is contracted in the peak block itself and met by storage discharge or by complementary wind.
Steep solar ramps, up to around 4,000 MW within an hour	No obligation to smooth output; the ramp is left to the system operator to cover.	Availability obligations across every single interval require the seller to smooth its own output.
Midday oversupply and curtailment	Surplus output earns only the Full Market Price, and curtailment risk sits with the generator uncompensated.	Surplus is stored and re-delivered into priced hours, which reduces both curtailment exposure and the surplus discount.
Firm capacity without new fossil plant	Adds energy but not firmness and can raise the residual peaking requirement.	Adds a contracted, dispatchable profile that can substitute for peaking plant.
Credible corporate clean-power claims	Supports an annual, volumetric claim only.	Produces interval-level delivery data capable of supporting a granular claim once a tracking layer exists.

Table 2. Value of potential RTC procurement in Vietnam

Vietnam lacks a direct equivalent to SECI's auction process; SECI acts as a central aggregator running reverse auctions and contracts back-to-back with off-takers. Instead, Vietnam has provincial investor selection under the Law on Bidding and the Law on Investment, but that process selects a project and its land and investment rights. It does not determine an offtake price through auction, and it operates province by province rather than nationally. Rather than establishing a new auction process, provincial-level PDP8 investors can voluntarily enter RTC contracts directly with EVN-EPTC. To determine RTC contract tariffs, Vietnam can rely on its existing framework, rather than set up something new. Ideally, an auction discovers the price of firmness directly from competing developers, and any non-auction method instead requires the regulator to estimate that price and carry the risk of getting it wrong. **An administered price bracket with negotiation within the ceiling (khung giá)** is the most institutionally familiar route in Vietnam and the natural default. EAV constructs a ceiling price from a benchmarked reference plant, MOIT issues it, and developers then negotiate their PPA with EPTC at or below the ceiling.

POLICY AND INSTITUTIONAL READINESS FOR RTC CLEAN POWER

CURRENT GAPS:

Policy and institutional gaps: Lack of clear legal definition of RTC Clean Power

Vietnam has several foundations for RTC clean power, including interval-based wholesale settlement, recognition of storage in power markets, and ongoing electricity-market reforms to strengthen the competitive power market. However, these elements remain fragmented. To be developed as a mechanism, RTC Clean Power must first be defined in the Vietnamese legal framework. The discussion above provides a first set of options for defining RTC. EVN-EPTC today can enter regulated PPAs and perform the single-buyer settlement function inside the VWEM. However, a firm, shaped clean-power contract carrying DFR obligations and penalties is a new instrument, not a variant of the standard PPA or the DPPA. It needs explicit authorisation.

Considering a portfolio of different technologies as a single entity for planning, operations, and dispatch may also require clear definitions and guidelines from policymakers.

PRIORITY ACTIONS:

LEAD: GOVERNMENT, WITH MOIT/EAV:

Standardise RTC Definitions and Governance: In the near term, adopt common definitions for RTC clean power, delivery intervals, DFR performance levels, and penalties, and designate MOIT/EAV to coordinate standards, data access, verification, and claims. The natural precedent for adopting something similar is the DPPA, which was defined in a Government Decree, with detailed applications fleshed out in MOIT circulars. Similarly, RTC Clean Power of comparable significance would most likely need its own Decree (Government, drafted by MOIT under the Electricity Law 2024 umbrella) plus a MOIT circular setting the model contract, the DFR definitions, layering the RTC obligation and fulfilment rules onto the existing 30-minute VWEM measurement under Circular 29, and the settlement rules.

LEAD: MOIT, WITH EVN AND NSMO:

Set RTC Procurement and Pricing Rules: Issue a dedicated RTC procurement Circular covering the product specification, eligibility, standards, evaluation methodology, performance obligation, PPA, and penalty regime. It must regulate contract terms, security, payments, penalties, replacement supplies, curtailment, grid events, force majeure, and asset portfolio modifications. In addition, a pricing Circular modelled on Circular No. 09/2025/TT-BCT, as amended by Circular No. 25/2025/TT-BCT and Circular No. 54/2025/TT-BCT, should establish an RTC price-cap methodology or confirm that RTC packages are not constrained by the separate price ceiling of each underlying technology. The first step should be a voluntary RTC demonstration tender, followed by repeatable procurement as performance is proven.

SYSTEM DISPATCH AND UTILITY PROCUREMENT

CURRENT GAPS:

Dispatch and market-rule gaps: Dispatch Rules Misaligned with RTC

The VWEM operating and settlement rules were built for ordinary market units, which offer energy into each trading period and are dispatched on merit against system need. They contain no category for a unit that has been contracted to deliver a firm quantity in specified blocks. Therefore, there is no priority-dispatch or must-take status for contracted RTC energy within the obligation windows. An RTC supplier is committed to a 90% DFR in the evening peak, yet under current rules its output is treated like any other unit's and dispatched on system need, which means the market rules do not recognise the very obligation the contract creates.

Generally, NSMO does not use priority dispatch. RTC can therefore be structured as an operational constraint, similar to irrigation requirements, or assigned a higher weighting/priority in the merit order so that it is dispatched ahead of conventional power plants. Generating units are dispatched based on their offered capacity and are generally settled at the System Marginal Price in the VWEM. If the system needs to dispatch generation beyond the offered capacity range, the additional output is settled based on the unit's actual bid price. Therefore, under an RTC procurement arrangement, the RTC supply would bid at zero to maximise the likelihood of being dispatched in line with its expected operating profile, meaning there would be very little excess energy. Any excess energy could be charged into the battery and held until the system needs it, at which point the BESS could bid at a higher price to be dispatched.

Dispatch and market-rule gaps: No Standard RTC Offtake Contracts

EVN and EPTC also lack standard contracts for procuring firm, time-matched clean power, including clear performance metrics, peak-period obligations and shortfall remedies. The off-taker for an initial RTC procurement would be EVN-EPTC, which already performs the single-buyer function inside the VWEM. Over a longer horizon, the Power Corporations should also be able to contract RTC clean power directly. What they lack is a reason to contract for a delivery profile, since their purchase cost is currently set administratively rather than by the interval price they face. That changes if the retail market introduces wholesale-linked pricing, which is why Power Corporation RTC procurement belongs with the competitive market transition rather than with the first tender.

BESS operating gaps: BESS lacks a Commercial Framework

BESS deployment in Vietnam is still largely led by utilities. Its commercial framework does not clearly define or monetise revenue streams from energy arbitrage, avoiding curtailment, firming and time shifting. Co-located and stand-alone storage also lack consistent rules for control rights, charging sources, dispatch priority, availability, settlement, and revenue stacking. However, a bigger issue is that BESS is not yet recognised as a distinct asset class. Clarity is needed on whether it requires a generation licence, how a stand-alone operator registers as a market participant, and how the storage component of a hybrid RTC facility will be treated legally.

The BESS constraint is therefore not only one of installed capacity, but also a commercial and operational gap that prevents storage from being fully integrated into utility procurement and RTC portfolios. Rules for assigning renewable attributes to stored electricity and verifying time-matched delivery through interval meter data also remain undeveloped.

PRIORITY ACTIONS:

LEAD: NSMO AND MOIT:

Embed RTC Obligations in Dispatch: First, create an RTC operational constraint and/or a higher weighting/priority for contracted RTC energy within the obligation windows, so that the market rules recognise the contracted firm quantity rather than treating RTC output as ordinary merit-order energy. This is what allows dispatch to reflect the obligation the contract creates rather than working against it.

Settle Hybrids as One Unit: Second, define a single metering boundary at the point of connection, with the hybrid facility registered as one settlement unit. This enables NSMO to settle the aggregate RE-plus-storage output while the facility self-dispatches its generation and storage behind the meter. This is also where the rules should fix the treatment of any grid import used to charge the battery, since that sits at the same boundary and bears on both settlement and the clean attribute.

LEAD: MOIT/EAV:

Standardise the RTC Offtake Contract: Finally, MOIT/EAV would need to establish a standard RTC contract for EVN and EPTC to procure RTC clean power, setting out the performance metrics (the DFR thresholds and the blocks they apply to), the peak-period obligations, and the shortfall remedies. This creates an enforceable commercial arrangement, and it is where the DFR definitions, the deemed-delivery treatment for system-driven curtailment, and the penalty formula are given contractual force.

LEAD: MOIT AND NSMO:

Recognise BESS as a Distinct Asset Class: The foundational step for RTC Clean Power is for MOIT, under the Electricity Law 2024 framework, to recognise BESS as a distinct asset class. The RTC contract cannot be signed if the battery inside the facility has no legal standing. This means resolving whether storage requires a generation licence or a separate category of authorisation, defining how a stand-alone operator registers as a VWEM market participant, and specifying how the storage component of a hybrid RTC facility is treated legally when it sits behind a single metering boundary.

This has to come first, because the control-rights, dispatch and settlement rules that follow have nothing stable to attach to until storage has a defined legal identity. Once that identity exists, the remaining changes can be set out in the dispatch and settlement rules (Circular 29/2026) and in Circular 62/2025.

Following that, amend Circular No. 29/2026/TT-BCT to enable portfolio registration, scheduling, imbalance calculation, settlement, and performance verification. Amend Circular No. 05/2025/TT-BCT and Circular No. 06/2025/TT-BCT to provide interval metering, telemetry, portfolio dispatch, storage state-of-charge, and curtailment rules. Circular No. 12/2025/TT-BCT should also be aligned with the RTC pricing and standard PPA framework. These amendments should connect physical dispatch, market settlement, and contractual performance without requiring an immediate move to a shorter market interval.



05.

RTC FOR CORPORATE BUYERS

CHAPTER SUMMARY

The DPPA is currently the only mechanism that links corporate buyers to 30-minute wholesale prices. Today's solar-based DPPAs leave buyers paying the retail rate for evening consumption, while midday surplus earns only the wholesale price. Allowing RTC portfolios to supply DPPAs would close that gap. However, buyers would also need clear rules for battery storage and a granular certificate to make time-matched claims, if they deem it necessary. CBAM does not yet cover electricity emissions for steel, Vietnam's largest exposure. The near-term value only lies in Scope 2 reporting, customer requirements, and price hedging.

CORPORATE CLEAN-ENERGY PROCUREMENT THROUGH THE DPPA

The DPPA is the only formal mechanism that links thirty-minute wholesale prices to a corporate consumer, through a financial contract for differences (CfD). That makes it Vietnam's clearest near-term platform for RTC procurement, even though the DPPA's present design creates neither an RTC product nor a granular clean-energy claim.

Decree 57/2025, as amended by Decree 243/2026, provides two corporate procurement routes:

I. Private-wire arrangements for consumers using at least 20,000 kWh/month,

II. A grid-connected route pairing an eligible solar, wind or biomass generator of at least 10 MW with a consumer in manufacturing, EV charging or data centres using at least 200,000 kWh/month at 22 kV or above. [49,50]

More than sixty DPPA contracts have been signed as of early 2026, but these are overwhelmingly private-wire and rooftop arrangements; the grid-connected route had only one operating transaction.[51]

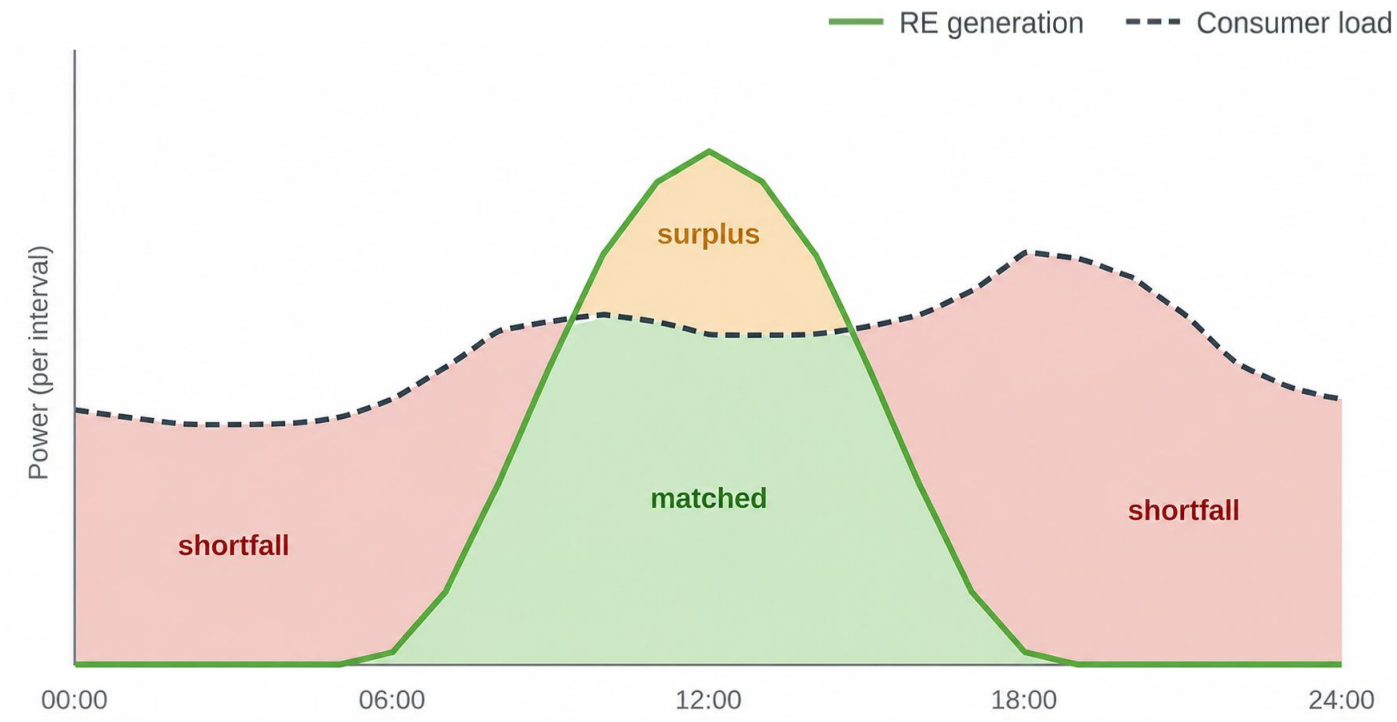
The initial transaction pairs Samsung Electronics with the 41.4 MWac TTC Duc Hue 2 solar plant. Although paired with battery storage, NSMO currently dispatches the battery for grid stability, rather than to shape delivery against the consumer's load. MOIT's late-2023 survey shows roughly 1,000 MW of buyer demand and 5,609 MW of generation interest, highlighting that the demand is there but execution is the blocker.

Decree 243/2026 permits negotiated pricing for physical DPPAs and surplus rooftop sales. It expands participant eligibility to retailers and slashes synthetic-DPPA registration from 7 steps to 3. For RTC, this broadens the demand base: data centres bring continuous loads suited to hourly matching, while exporters face supply-chain and CBAM reporting requirements.

In grid-connected DPPAs, generators sell output into the VWEM while consumers buy from local utilities. A Forward Electricity Contract settles differences against 30-minute wholesale market prices, with each interval split into matched generation, surplus sold at the market price, and unmatched consumption bought at the retail tariff. That exposes today's solar-dominated transactions to a recurring mismatch: midday surplus earns the wholesale price while evening shortfalls are covered at the retail tariff. Wind can complement solar but remains dependent on the weather. Biomass can be dispatchable where fuel supply and operating arrangements allow; firm delivery would still need to be contracted and verified.

The DPPA remains a settlement mechanism rather than an RTC product. It lacks delivery profile requirements, interval coverage metrics, and clear risk-allocation rules. Private-wire arrangements give a clearer physical link but are constrained by geography; the grid-connected route is more scalable, yet a granular claim still needs the tracking layer discussed below.





Matched	min(generation, load): RE actually serving load that interval
Surplus	generation > load (midday): excess RE injected to the grid
Shortfall	load > generation (mornings, evenings, nights): unserved load

	Vietnam grid-connected DPPA (Model 2)
Matched	Generator sells output to VWEM at the 30-min spot price (FMP); the CfD trues the matched MWh to the contract strike.
Surplus	Excess output also sold to VWEM at spot; the CfD trues only the matched volume; the surplus is monetized at the VWEM prices.
Shortfall	Consumer buys the deficit at the regulated retail tariff ("CBL" in Decree 57): an administered, broadly flat energy price, plus wheeling and system charges.

Figure 9. Schematic of the three-way settlement split in a grid-connected DPPA

Source: XanhTerra. Settlement logic follows Decree 57/2025 and thirty-minute VWEM pricing.
The profile shown is solar, reflecting the fact that DPPA participation in Vietnam is currently dominated by solar photovoltaic (PV); the same three-way split applies to a wind or biomass seller, whose matched, surplus, and shortfall intervals would fall at different times of day.

The consumers for whom RTC is most relevant. Continuous-load buyers such as data centres and manufacturers need round-the-clock clean energy supply the most. Solar-only generation profiles do not match their flat consumption patterns effectively. At present, no standardised RTC procurement product is available to them. Consequently, non-daylight consumption remains unmatched, forcing buyers to purchase grid power at standard retail tariffs. Decree 243/2026 extended eligibility to data centres and EV-charging operators, but it did not introduce a supply or procurement product corresponding to their consumption profile.

EXTERNAL REQUIREMENTS & VIETNAM'S READINESS

The EU Carbon Border Adjustment Mechanism entered its definitive phase on 1 January 2026. Currently, indirect emissions from purchased electricity are counted only for cement, fertilisers and agglomerated iron ore, and such indirect emissions are outside the CBAM scope for iron and steel, aluminium and hydrogen.[52,53]

That matters because Vietnam's largest CBAM exposure is iron and steel, with more than EUR 2.2 billion exported to the EU in 2024. A DPPA does not currently reduce a Vietnamese steel exporter's CBAM certificate liability; its near-term value rests on Scope 2 reporting, customer and supply-chain requirements, and hedging.

However, the forward-looking position is different. On 8 June 2026, the European Commission published a Technical Study on Indirect Emissions in CBAM, examining default emission factors, the conditions under which declarants could claim actual indirect emissions (including power purchase agreements and verification), and whether indirect coverage should extend further.

The GHG Protocol Scope 2 revision points in the same direction, proposing hourly matching and deliverability for market-based accounting while retaining possible fallbacks. Its timetable has lengthened: a consolidated consultation is planned for the second quarter of 2027 and publication for the fourth quarter of 2028, with staged effective dates thereafter.

These are benchmarks for corporate claims rather than extra layers of Vietnamese market rules. Vietnam's framework does not yet let buyers turn interval-level procurement into independently verifiable claims. These standards could drive demand among multinational manufacturers, RE100 members, and exporters.

WHAT THIS MEANS FOR RTC.

Vietnam's national-grid DPPA is a workable settlement mechanism but not yet an RTC product. Buyers still need defined delivery profiles, clear allocation of shortfall and storage risk, and a credible basis for verifying time- and location-matched claims.

DATA ACCESS, TRACKING AND VERIFICATION

Tracking and verification gaps. Certificates in Vietnam are issued, matched, and retired against annual volumes, not against intervals. No common methodology covers time resolution, eligible technologies, geographic boundaries, storage, grid losses, unmatched consumption, and surplus generation, and no protocol for verifying a time-based claim independently.

Contracts and invoices can support a claim when backed by time-stamped data, but on their own they leave the attribute question open. Electricity payments alone do not prove exclusive attribute ownership. Monthly invoices cannot demonstrate interval-level matching, leaving verifiers without an auditable chain from generation to consumption. Common rules are needed for storage charging, losses, attribute transfer, surplus and unmatched demand, and the architecture must connect meter data, attribute allocation and consumption with controls against double issuance.

Where actual electricity emissions are claimable, three matching tests derived from EnergyTag's granular certificate matching standard apply directly (Table 3). Vietnam's virtual DPPA structure meets these three unevenly, and a fourth question, whether an instrument exists to carry the claim, remains the core gap.

EnergyTag's Criteria	Vietnam grid-connected DPPA (virtual / CfD)	Assessment
Linkage to the consuming facility	The generator sells into the VWEM; the consumer keeps buying from its power company. The two are joined only by a contract for differences.	Weak. Financial linkage alone does not evidence that renewable electricity was consumed at the facility.
Deliverability within the grid area	Electricity flows through the national grid; both parties sit inside a single synchronous system, and the project and buyer are individually identifiable.	Partial and favourable. Traceability is good; a defined deliverable-grid-region rule would need to be set.
Simultaneity of generation and consumption	Wholesale settlement already occurs every thirty minutes, and matched, surplus and shortfall volumes are identified per interval.	Strongest element. The timing data exists – but it is a settlement output, not a certified claim.
Instrument to carry the claim	Vietnam relies on annual, volumetric REC certificates. There is no hourly tracking layer or granular registry.	The core gap. Matched thirty-minute intervals cannot currently be converted into verifiable claims.[54]

Table 3. Vietnam's virtual DPPA against EnergyTag's three matching tests & instrument

WHAT IS NEEDED TO INCORPORATE RTC CLEAN POWER IN DPPA

The DPPA already carries the interval price signal. Turning it into a route for round-the-clock supply requires several changes; however, none of which needs a new mechanism beyond what is already noted above in Chapter 4.

A defined delivery obligation. Decree 57/2025 sets out who may contract and how the difference is settled, but not what the seller must deliver. Currently, there is no obligation for the RE supplier to match the contracted consumer's demand profile at each interval. Furthermore, current rules on BESS co-located with the RE supply prevent the co-located BESS from being used to shape generation against the consumer's load. However, if an RTC Clean Power supplier can be allowed as a DPPA supplier, then there is a greater potential to have the demand profile (particularly of those with relatively flat loads such as data centres, electronics manufacturing and others) better matched. Meeting an interval obligation reliably requires several generators, at least one storage asset and, in time, demand response, contracted as a single portfolio against one delivery profile, with internal netting before settlement.

Decree 243/2026 has already widened the participant base to licensed retailers, data centres and EV-charging operators, which supply the natural aggregating counterparties. Therefore, when the next change to the DPPA rules is introduced, **EAV and MOIT** can include an RTC Clean Power supply as an RE supplier for DPPA consumers.

Rules governing BESS within a DPPA contract. Vietnamese law characterises a battery either as a regulated cost or as a system-dispatch resource and does not at present directly address storage held within a direct power purchase arrangement. NSMO currently controls scheduling and dispatch for generator-paired batteries. Consequently, neither generators nor consumers can deploy grid-connected storage to shape delivery against actual consumption profiles.

For RTC-based DPPA, MOIT and NSMO will need to allow supply-side BESS in RTC contracts to be controlled for counterparty load-shaping. Alternatively, clear rules must resolve operational conflicts when system dispatch diverges. Co-located BESS in corporate DPPAs requires clear legal standing. Regulators must formally recognise storage assets so they can participate directly in power market operations. These rules should specify expressly who exercises control over the battery, the permitted sources of charging energy, the method by which discharged energy is attributed to the consumer's intervals, and the treatment of conflicts between system dispatch and contractual delivery.

Note that an off-taker with its own behind-the-meter battery can shape its net load against a plain DPPA today, without waiting for supply-side storage rules to change. That is a weaker form of RTC, because the shaping happens at the consumer end rather than being delivered as a firm clean product, and the clean-attribute question still applies to whatever the battery charges from. Nonetheless, it is available today.

An instrument to carry the claim. Matching under the DPPA is a settlement output. Without time-stamped certificates, a buyer with a perfectly shaped contract still reports an annual volumetric claim. The interval matching is real in the settlement but invisible in the claim, which defeats the purpose of contracting for round-the-clock supply in the first place, especially for those seeking 24/7 CFE. What is then required is a granular certificate layer that attaches a time-stamped attribute to each matched interval.

LEAD: EAV, WITH NSMO AND THE I-REC ISSUER:

Certify time-matched clean power claims: DPPA matching currently produces settlement data rather than certified claims. MOIT and EAV should formally recognise time-stamped certificates, allowing authorised scheme operators to issue interval certificates from settlement data. A medium-term step is to establish a granular tracking layer by adding time-stamped meter data onto the existing REC framework (e.g. I-REC, TIGRs), rather than replacing it. This approach is consistent with Configuration 3 of the EnergyTag Granular Certificate Scheme Standard.[55] EAV can establish matching methodologies, verification protocols, and tracking frameworks. Under this structure, NSMO provides meter data while certificate issuers operate the attribute tracking layer. In the longer term, consolidate this into an auditable reporting framework aligned with the GHG Protocol Scope 2 revision and CBAM,[56] so that the corporate buyer's time-matched claim is defensible for export-oriented and multinational customers. A formal legal standing for a national granular certificate may require a MOIT circular or a Government Decree, while the technical standards remain with EAV.

WHAT THIS MEANS FOR RTC.

Vietnam has the interval settlement and metering foundations needed to observe and match electricity over time, but it lacks the attribute layer. Without common rules on ownership, transfer through storage, retirement, and audit (and without open access to curtailment, congestion, FMP, and dispatch data), interval settlement cannot support a credible granular claim.



06.

RECOMMENDATIONS AND CONCLUSIONS

CHAPTER SUMMARY

We set out twelve recommended actions across three tracks: policy, utility procurement, and corporate procurement. Each is sequenced over the near, medium, and long term, with a named lead body. The first priorities are:

- Recognising battery storage in law,
- Defining RTC clean power, and
- Launching a voluntary demonstration.
- Implementing the new time-of-use windows and publishing curtailment data are low-cost steps that support both procurement routes. Corporate buyers can act now by installing their own batteries to shift demand out of the evening peak.

As discussed earlier, Vietnam is very much ahead of the RTC pathway, compared to many other countries in Southeast Asia.

The task now is to assemble these building blocks (a 30-minute wholesale settlement interval, a functioning DPPA mechanism, a substantial national storage target, and an active programme of market reform) into procurement structures through which renewable generation can be contracted, delivered, and verified according to when and where it is produced.

The recommendations are organised into three tracks:

- The policy and institutional readiness that both routes depend on
- Utility route through which EVN and EPTC procure firm clean power,
- The corporate route through which large buyers contract it under the DPPA.

The detailed roadmap for recommendations for Vietnam is organised in Table 8 of the annexure, which consolidates the recommendations across the near, medium and long term, along with the institution responsible for leading each action. This is intended as a sequencing guide rather than a fixed schedule.

Policy and Institutional Readiness	System Dispatch and Utility Procurement	Corporate Procurement
• Set the rules: Define RTC clean power by reliable delivery, not technology, and give it a legal basis through a new decree and circular. • Hold suppliers accountable: Require high delivery during the evening peak, with penalties for shortfalls. • Pilot, then scale: Start with a small tender, learn from the results, and expand into the wider power market.	• Make storage official: Give batteries clear legal status so they can be licensed and take part in the market. • Adapt grid operations: Give contracted RTC power priority in dispatch, and meter hybrid plants as a single unit. • Standardise contracts: Create a standard utility contract and align the market rules so everything works on the same 30-minute basis.	• Start with big users: Focus first on data centres and manufacturers through the existing DPPA scheme. • Expand the DPPA model: Let RTC suppliers join and allow bundled supply from multiple generators and storage. • Make green claims credible: Move towards time-matched, verified clean energy certificates, while companies use their own batteries in the meantime.

Table 4. Recommendations in three tracks

Vietnam has already laid the groundwork for round-the-clock clean power. It has one of Southeast Asia's largest renewable fleets, a wholesale market that settles every 30 minutes and a working DPPA mechanism.

With the growth of renewables, the challenge lies in integrating the renewable resources efficiently. Demand is peaking in the evening, after solar output has faded, and that peak is growing much faster than overall demand. The next task for the system is to connect existing building blocks so that clean power is valued by when it is delivered.

RTC contracts would turn renewables and storage into a firm resource that helps meet that peak without new fossil capacity.

Extending the same model to the DPPA, supported by time-stamped certificates under the existing REC framework, would give data centres, manufacturers and exporters a stronger price hedge and credible, verifiable clean-power claims as international reporting standards move towards hourly matching.

The path forward is progressive and gradual. It begins with recognising battery storage as a distinct asset class, defining RTC clean power in law and testing the model through a voluntary pilot. Low-cost steps, such as billing the new time-of-use windows and opening access to interval and curtailment data, can start now. As each step builds on institutions Vietnam already has, the country can move from a deployment success to a power system that delivers firm clean power.



ANNEX

Benefit	Description
RTC Benefits for Power System	
Higher system value and better integration	IEA analysis shows that hourly matching can deliver higher system value than annual matching, because it draws in a more diverse mix of generation, storage and flexibility. This aligns electricity supply with system needs and helps ease curtailment.
Lower system costs	Tighter alignment between supply and demand reduces balancing requirements and makes better use of existing generation and grid assets. TransitionZero's modelling across five Asian markets indicates that hourly-matched clean electricity can be procured at minimal additional cost, while also creating potential savings for grid operators and governments. Transmission upgrades or new investments could potentially be deferred, creating further savings for EVN.
Stronger energy security	RTC creates stronger commercial incentives for storage and other flexible clean technologies that can supply power when renewable output is low. By reducing the need for fossil-fuel balancing, these resources can lower Vietnam's reliance on imported fuels and its exposure to international fuel-price volatility and supply disruptions.
Stronger market signals for private investment	Firm, time-matched clean-power demand creates clearer commercial opportunities for storage, demand response and other flexibility. This helps mobilise private capital towards the technologies that renewable integration requires, complementing centrally planned capacity.
More competitive investments	Credible RTC supply procurement strengthens Vietnam's offer to multinational manufacturers, data centres and other investors seeking higher-quality clean power. Setting granular accounting and verification rules early would also let Vietnam shape, rather than react to, emerging international carbon-accounting and trade requirements.
RTC Benefits for Large Electricity Consumers	
Firmer coverage and a stronger price hedge	RTC gives Vietnamese commercial and industrial consumers greater certainty that contracted clean power is available when electricity is actually consumed, not merely matched in annual totals. Depending on contract design, this reduces exposure to high-price hours and improves cost visibility.
Higher carbon competitiveness and market access	Time-matched clean power provides more robust evidence of electricity-related emissions reductions, supporting increasingly stringent customer, supply-chain and carbon-accounting requirements. For exporters in CBAM-covered sectors, lower and better-documented embedded emissions can strengthen competitiveness where indirect electricity emissions are relevant.
More credible decarbonisation claims	RTC lets a business show not only how much clean electricity it buys, but how closely that supply tracks actual consumption. This provides a firmer basis for granular claims and for progress towards 24/7 CFE goals.

Table 5. RTC benefits

FOURTEEN INSTRUMENTS IN THREE YEARS: VIETNAM'S INTEGRATION AND MARKET-DESIGN STACK

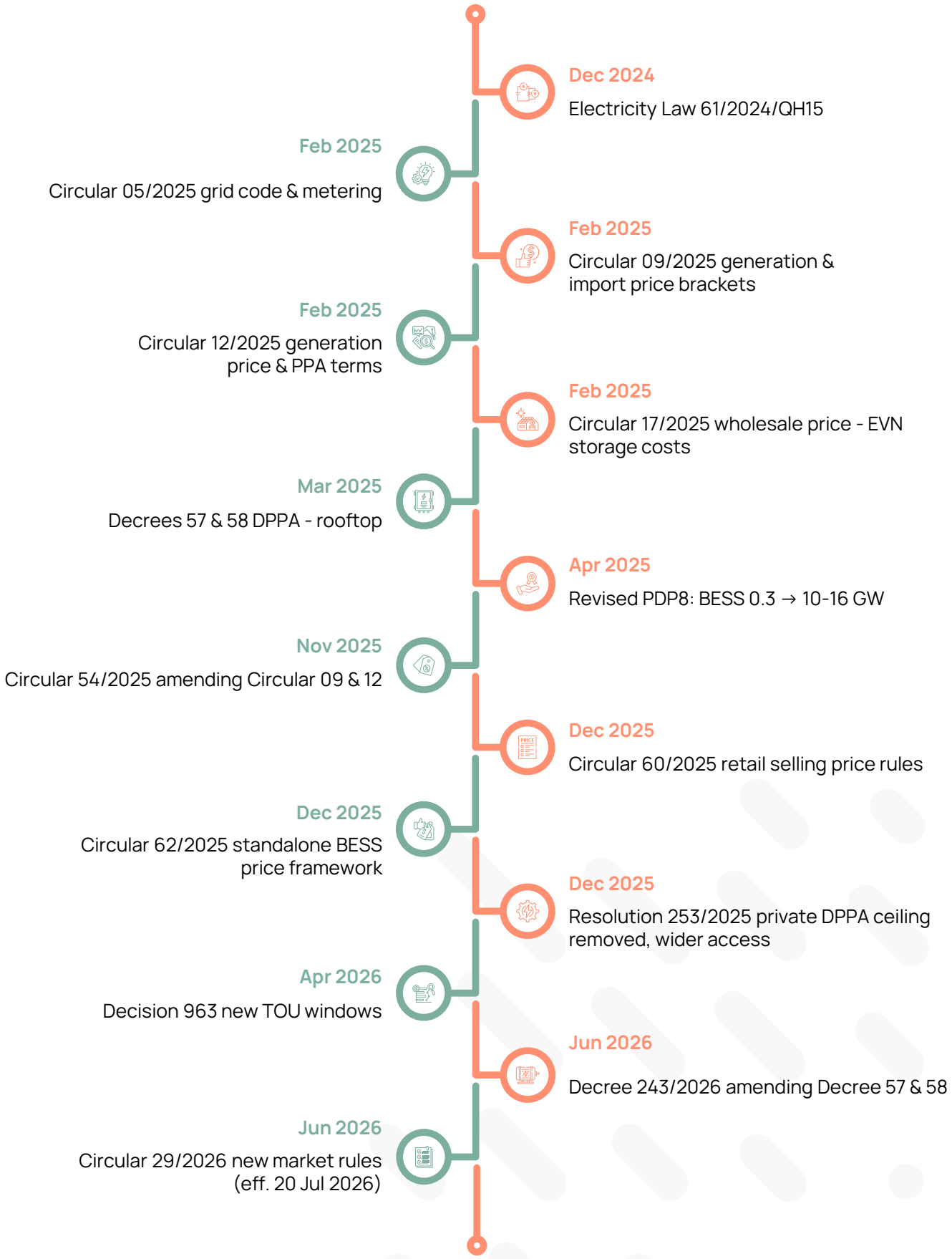


Figure 10. Principal instruments shaping renewable integration and market design

Source: XanhTerra

STORAGE IS THE LARGEST PROPORTIONAL REVISION IN THE PDP8 (2025)

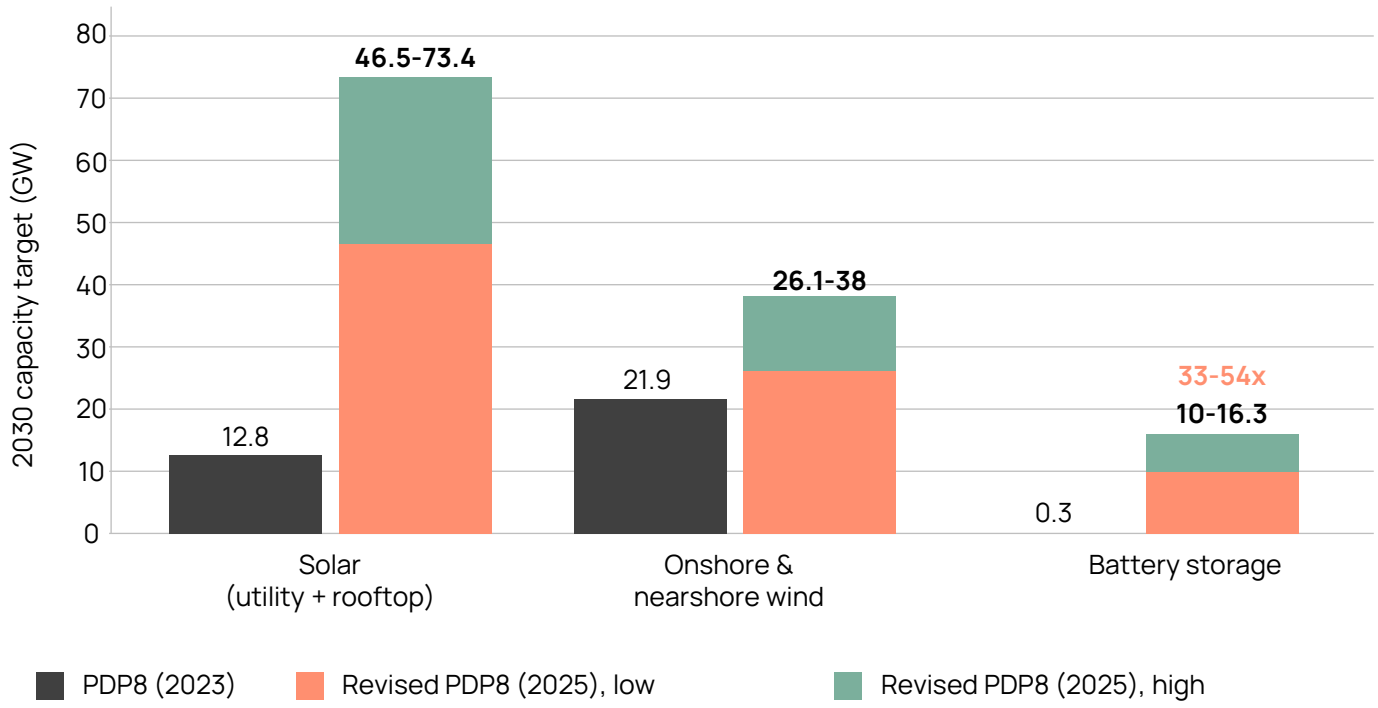


Figure 11. 2030 capacity targets, PDP8 (2023) against the revised PDP8 (2025)



Technology	2022	2023	2024	2025	2026	Notes
Ground-mounted solar	None	1,184.90[61]	None	1,382.7 N / 1,107.1 C / 1,012.0 S[62]	Pending[63]	The 2023 figure is a single national transitional ceiling; from 2025 the bracket is split by region. Flat in every year.
Floating solar	None	1,508.27[64]	None	1,685.8 / 1,336.1 / 1,228.2[65]	Pending	No floating-solar project had an approved feasibility study when the 2026 bracket was calculated, so the draft rests on reference data.
Ground-mounted solar with storage	n/a	n/a	Under study	1,571.98 / 1,257.05 / 1,149.86[66]	Pending	First recognised in 2025. Qualifying parameters: battery of at least 10% of plant capacity, two hours of storage and discharge, charging energy equal to 5% of output.
Floating solar with storage	n/a	n/a	Under study	1,876.57 / 1,487.18 / 1,367.13[67]	Pending	Same qualifying parameters. The premium over the no-storage ceiling is 11–14%, and it is paid for installing the battery, not for when the battery discharges.
Onshore wind	None	1,587.12[68]	None	1,959.4 N / 1,807.4 C / 1,840.3 S[69]	Pending	The only bracket in which the Central region is the cheapest rather than the South.
Nearshore wind	None	1,815.95[70]	None	1,987.4, uniform across all three regions[71]	Pending	Decision 21 called this category “offshore”; from 2025 it is “nearshore” and true offshore is priced separately.
Offshore wind	None	None	None	3,975.1 northern sea / 3,078.9 south-central sea / 3,868.5 southern sea[72]	Pending	First bracket ever set for the technology, by sea area rather than by land region. No project has an approved feasibility study, and EVN’s draft 2026 calculations span 3,110–4,585.

Table 6. Administratively set ceiling prices for renewable generation, 2022–2026

Ceiling prices in VND/kWh, excluding VAT. N / C / S denote the northern, central and southern brackets. “None” means no bracket was in force for that technology in that year: the feed-in tariffs had lapsed and Circular 15/2022/TT-BCT only set the method, which Circular 09/2025/TT-BCT replaced from 1 February 2025, while for 2024 no annual bracket was issued at all and Circular 19/2023/TT-BCT allowed the most recent bracket to be applied in the meantime. “Pending” means the 2026 bracket had not been approved as at early September 2026. In no year and for no technology does the ceiling vary by the hour of delivery.[73,74] Sources: Decision 21/QĐ-BCT of 7 January 2023; Decision 988/QĐ-BCT of 10 April 2025 and Decision 1508/QĐ-BCT of 30 May 2025; Decision 1824/QĐ-BCT of 26 June 2025; and the 2026 draft calculations put out for comment by the Electricity Authority. [75,76,77,78]

Customer class	Time-of-use pricing?	Voltage bands	Tariff structure
Manufacturing and production	Yes	Four: below 6 kV; 6–22 kV; 22–110 kV; 110 kV and above	Separate normal-hour, off-peak-hour and peak-hour rates. At 110 kV and above the rates are 3,266 VND/kWh at peak, 1,811 normal and 1,146 off-peak.
Business and commercial (services, trade, hotels and similar)	Yes	Three: below 6 kV; 6–22 kV; above 22 kV	Separate normal-hour, off-peak-hour and peak-hour rates. These customers face the highest absolute rates in the schedule.
Residential	No	Not applicable	Progressive consumption blocks, with no time dimension.
Administrative and public service	No	Not applicable	Flat rates, with no time dimension.

Table 7. Retail tariff structure by customers class, as billed in August 2026

Source: XanhTerra, from the retail tariff schedule in force since 10 May 2025 and the Circular 16/2014 time-of-use windows

Track	Priority area	Near term (next 12 months)	Medium term (1 – 2 years)	Long term (2+ years)
Policy and Institutional Readiness for RTC Clean Power	**1.** RTC definitions and legal basis	Lead: Government, with MOIT/EAV. • Define RTC clean power by delivery performance rather than by technology, so that any combination of renewable generation with storage or other flexible resources qualifies. • Set the 30-minute delivery intervals, DFR levels, and penalties in the same instrument; assign MOIT/EAV to coordinate standards, data, verification and claims. • Consider a dedicated Government Decree under the Electricity Law 2024 and a MOIT Circular for the model contract, DFR fulfilment and settlement rules.	Lead: Government and MOIT, with EAV. • Refine the Decree and implementing rules using the demonstration, connecting 30-minute VWEM measurement, delivery fulfilment and contract settlement.	Lead: Government and MOIT. • Embed the proven RTC mechanism in the competitive power-market framework as it develops.
	2. Delivery obligation and DFR	Lead: MOIT/EAV, with EVN/EPTC. • Based on the Government Decree, start with a proposed 90% DFR in every 30-minute block from 17:30 to 22:30 (peak periods defined in Decision 963/2026); lower DFRs in solar and other hours. • Consider a penalty of 1.5 times the RTC tariff per 30-minute block; credit system-security curtailment towards the DFR.	Lead: MOIT/EAV, with NSMO. • Standardise DFR thresholds, deemed delivery for system curtailment and penalties in repeatable RTC contracts.	Lead: MOIT/EAV. • As RTC performance is proven, consider higher DFRs in solar and other non-peak blocks while retaining the evening-peak obligation.
	3. RTC tender and pricing	Lead: MOIT, with EVN and NSMO. • Issue an RTC Clean Power Procurement Circular on product eligibility on the same technology-neutral basis, standard PPA, security, payment, penalty for under-delivery, replacement supply, curtailment, grid events, force majeure and portfolio changes. • Set an RTC Clean Power ceiling price methodology modelled on Circular No. 09/2025/TT-BCT, as amended by Circular No. 25/2025/TT-BCT and Circular 54/2025/TT-BCT, or confirm that technology-specific ceilings do not constrain RTC packages. • Encourage a voluntary RTC demonstration procurement of up to 600 to 660 MW in aggregate, with individual contracts of 50 to 200 MW.	Lead: MOIT, with EVN/EPTC. • Refine ceiling prices based on verified initial performance of RTC Clean Power.	Lead: MOIT and EVN/EPTC. • Scale RTC procurement to larger volumes as demand and enforceable contract performance are demonstrated.
System Dispatch and RTC Utility Procurement	**4.** BESS legal status	Lead: MOIT, with NSMO. • Recognise BESS as a distinct asset class; clarify licensing, standalone VWEM registration and the legal status of storage within a hybrid RTC facility. • MOIT to publish the numeric price bracket for standalone BESS under Circular No. 62/2025/TT-BCT.	Lead: MOIT and NSMO. • After BESS receives legal standing, finalise and bring into effect its dispatch and settlement rules under Circular No. 29/2026/TT-BCT.	Lead: MOIT and NSMO. • Apply BESS licensing and market-participation rules to competitively procured storage and storage within winning RTC portfolios.

Track	Priority area	Near term (next 12 months)	Medium term (1 – 2 years)	Long term (2+ years)
System Dispatch and RTC Utility Procurement	**5.** Dispatch treatment and surplus energy	Lead: NSMO and MOIT. • Create a RTC operational constraint and/or a higher weighting/priority for contracted RTC energy within the obligation windows, so that the market rules recognise the contracted firm quantity rather than treating RTC output as ordinary merit-order energy. • Settle energy above contracted quantity under ordinary VWEM rules.	Lead: NSMO, with MOIT. • Test the obligation-window dispatch and excess-energy rules in the demonstration and adjust their operational details.	Lead: NSMO and MOIT. • Apply tested RTC dispatch and surplus-settlement rules to repeatable procurement.
	6. Hybrid metering and grid charging	Lead: NSMO and MOIT, with EVN. • Register the hybrid facility as one settlement unit at the point of connection; NSMO settles aggregate RE-plus-storage output while the facility manages assets behind the meter. • Define how grid imports used to charge BESS affect settlement and clean attributes.	Lead: NSMO and MOIT. • Verify aggregate output and storage charging at 30-minute resolution in the pilot; refine behind-the-meter reporting.	Lead: NSMO and MOIT. • Standardise the single-boundary approach for eligible hybrid RTC facilities.
	7. Standard EVN/EPTC RTC contract	Lead: MOIT/EAV. • Set DFR thresholds and blocks, peak obligations, shortfall remedies, deemed delivery for system-driven curtailment and the penalty formula in a standard RTC contract for EVN/EPTC.	Lead: MOIT/EAV, with EVN/EPTC. • Standardise EVN/EPTC RTC contracts and have NSMO verify delivery in subsequent procurement.	Lead: Government, with MOIT and EVN. • As RTC procurement proves out and the planned VWEM framework changes are in place, consider whether the PCs can also directly procure RTC Clean Power, subject to demonstrated demand and contract enforceability.
	8. VWEM, metering and BESS rules	Lead: MOIT and NSMO. • Amend Circular No. 29/2026/TT-BCT for portfolio registration, scheduling, imbalance, settlement and performance verification. • Amend Circular Nos. 05/2025/TT-BCT and 06/2025/TT-BCT for interval metering, telemetry, portfolio dispatch, battery state of charge and curtailment; align Circular No. 12/2025/TT-BCT with RTC pricing and the PPA. • Connect dispatch, settlement and contract performance at the existing 30-minute market interval. • These rules also apply to storage co-located with a DPPA supplier on the same basis; the only DPPA-specific addition is that supply-side BESS contracted to a delivery obligation may be controlled by the generator or portfolio for load-shaping against the consumer's profile, or the conflict with NSMO dispatch resolved.	Lead: MOIT and NSMO. • Complete compatible BESS control, charging, availability and revenue-stacking rules for firming, time shifting, arbitrage and avoided curtailment.	Lead: MOIT and NSMO. • Maintain alignment of physical dispatch, VWEM settlement and contract verification at the existing 30-minute interval.

Track	Priority area	Near term (next 12 months)	Medium term (1 – 2 years)	Long term (2+ years)
RTC Corporate Procurement	**9.** Eligible buyers and DPPA starting point	Lead: EAV, with MOIT. • Focus on continuous-load data centres and manufacturers; Decree No. 243/2026/ND-CP extends DPPA eligibility to data centres, EV charging and battery-swapping operators, and licensed retailers in industrial and economic zones and clusters. • Pilot through the grid-connected DPPA's 30-minute CfD, addressing midday surplus and evening shortfalls. Use private wire where feasible.	Lead: EAV, with MOIT. • Aggregate eligible buyers, including industrial park retailers, in portfolio DPPAs.	Lead: EAV, with MOIT. • Expand portfolio-DPPA participation as buyer demand matures and calibrated delivery obligations reach larger scale.
	10. Portfolio DPPA and delivery obligation	Lead: Government, with MOIT/EAV. • Amend Decree No. 57/2025/ND-CP, as amended by Decree No. 243/2026/ND-CP, to admit RTC Clean Power suppliers and pilot buyer-specific 30-minute portfolio DPPAs. • Specify the delivery interval, coverage metric, peak treatment, eligible resources, residual supply, shortfall remedies and internal netting.	Lead: EAV, with MOIT. • Standardise firm, storage-backed and shaped templates; aggregate generators and storage.	Lead: EAV, with MOIT. • Scale calibrated delivery obligations as buyer demand matures.
	11. Granular certificates and buyer claims	Lead: MOIT/EAV, with NSMO and REC certificate issuer. • Allow buyers to publish a voluntary interval-matching score at 30-minute resolution from DPPA settlement data, disclosed as a percentage of consumption matched rather than as a certified claim, and improved over time. • Recognise time-stamped granular certificates, issued by REC, alongside annual certificates for clean-power claims and permit an issuer to use DPPA interval-matching data.	Lead: EAV, with NSMO, REC issuer and verifiers. • Add time-stamped data to REC (EnergyTag Configuration 3); link buyer and generator meters, contracts, settlement intervals and certificates. • Set rules for deliverability, storage, losses, surplus and unmatched demand; prevent double issuance and verify claims independently. Formal legal standing may require a MOIT circular or Government Decree.	Lead: EAV, with verifiers. Consolidate auditable corporate time-matched claims aligned with the GHG Protocol Scope 2 revision and relevant CBAM developments.
	12. Buyer-side flexibility available today	Lead: Corporate buyers, with their DPPA generator counterparty. • Deploy behind-the-meter storage to shift net load out of the 17:30 to 22:30 peak under an existing DPPA or ordinary retail supply. Offtaker-side batteries sit outside NSMO dispatch, so no regulatory change is required and no supply-side storage rule needs to be settled first. • Account separately for the energy used to charge the battery. Charging from the grid outside matched intervals does not carry a clean attribute, so the shaped profile improves cost exposure before it improves any claim.	Lead: Corporate buyers. • Move from buyer-side shaping to contracted supply-side delivery as RTC Clean Power suppliers are admitted to the DPPA. Note: Buyer-side storage shapes consumption at the consumer's end rather than delivering a firm clean product, so it is a weaker form of RTC. However, it is an option available without regulatory change.	Lead: Corporate buyers, with verifiers. • Combine buyer-side flexibility with portfolio DPPAs and granular certificates, so that shaped consumption is verifiable rather than merely observable

Table 8. Recommendations by timeframe for RTC Clean Power in Vietnam

Source: XanhTerra

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