



RWLY Whitepaper

The settlement layer for rewards

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Technical documentation · Patent application PCT/US26/20246 pending

Rewardly Protocol Inc · rwly.live

Earn-origin tagged · Escrow-backed · Coalition-scoped · Compliance-led deployment

Abstract

Rewards are issued at enormous scale against private ledgers and redeemed on terms the issuer sets afterwards. RWLY turns the reward into a record. The moment a reward is earned, its origin, its coalition and its value are written on-chain and fixed. The coalition's outstanding obligations are counted against stablecoin it holds in escrow, with a live health factor. Settlement happens inside the coalition that issued the reward, and crosses boundaries only by explicit, fee-bearing paths.

The protocol was designed first. Its first application — a coalition rewards platform for malls, districts, airports and campuses — proves the model in points and local currency, on ordinary banking rails, and operates today on its own ledger. The protocol generalises what the application proves, so that any operator or software company can build the same thing on one settlement layer. Deployment is compliance-led: the protocol activates region by region, where a regulatory framework for digital settlement is ready.

RWLY is an ERC-20 token on Polygon PoS with a 100B initial supply and a 120B hard cap enforced in the token contract. The protocol comprises 35 contracts across seven layers and a cross-chain bridge, upgradeable behind a 24-hour timelock, deployed and exercised end-to-end on Polygon Amoy testnet. Mainnet deployment and token generation follow an external, integration- and configuration-scoped review.

1. The opportunity

Loyalty is one of the largest pools of issued value in consumer commerce. Industry estimates place global issuance in the hundreds of billions of dollars a year, with roughly half of issued value never redeemed. The structural causes recur across industries:

- Value is decided at redemption, after the customer has performed.
- Points live in silos; exchange between programs is rare, manual and lossy.
- Backing is invisible to customers, partners and regulators.
- Multi-operator places — a mall, a district, an airport, a campus — run dozens of programs with no settlement layer any of them owns.

RWLY addresses each with a commitment enforced in code: value fixed at earn time, obligations backed by observable collateral, and settlement scoped to the entity that created the obligation.

2. The protocol

2.1 Four methods

Earn-time commitment. When an operator validates a qualifying event — a purchase, a shift worked, a visit, an action — the commitment is recorded on-chain with its coalition, its source class, the oracle price at that moment and a unique receipt hash. The committed amount is immutable. Its status moves only to *settled*, or to *cancelled* with an on-chain reason.

Coalition escrow with health factor. A coalition's outstanding obligations are counted against stablecoin it has deposited in escrow. The health factor — escrow divided by obligations — is recalculated on every change. Issuance requires 1.5× cover; below 1.1× the coalition is in warning; below 1.0× settlement pauses; below 0.8× the coalition is in default and the insurance fund activates after a grace period. Deposits and withdrawals are gated by different roles, so a coalition's funding wallet is structurally unable to drain its own escrow.

Coalition-scoped settlement. Conversion batches settle against the issuing coalition's escrow, inside that coalition. Cross-coalition redemption is explicit and carries its own fee. Regional settlement is configured and paused per region.

Earn-origin tagging. Every commitment carries its source class — point of sale, validated receipt, workforce sync, impact action, grant — as an on-chain enumeration. The origin of value travels with the value.

Two patent applications covering these methods are pending.

2.2 One strategy, two speeds

The application runs wherever an operator does — the United States, Europe, the Middle East, Asia — in points and local currency, on the payment rails each market already uses, under each market's existing rules. The protocol activates region by region, as frameworks for digital settlement are ready. Where a framework is still forming, the application operates and the protocol follows it. The application runs on its own ledger; protocol integration is on the roadmap.

3. Architecture

3.1 Seven layers and a bridge

The protocol is organised as seven contract layers deployed bottom-up in dependency order, plus a cross-chain bridge. Each layer has a single job and a single trust boundary. Thirty-one contracts form the stack and four form the bridge: 35 in total; the inventory is in Appendix A and on rwly.live/protocol.

Layer	Name	Function
1	Foundation	Roles, storage, parameters, upgrades
2	Control & Policy	Compliance tiers, price truth, supply policy
3	Money Core	The token, fees, treasury, economics
4	Operations	Escrow, earn-time commitment, conversion, regional settlement
5	Distribution	Staking, vesting, emissions, operator bonds
6	Business Registry	Who may issue, who may redeem, who holds
7	Market Operations	Inventory crossing and DEX execution
—	Bridge	Cross-chain representation of RWLY

The RWLY protocol stack

Seven layers, deployed bottom-up in dependency order. The bridge is a second chain, drawn apart.



Trust boundaries. Roles are granted by governance and deployer bootstrap roles are retired before token generation. Policy and price truth sit in one layer for every layer above, with a three-level circuit breaker that halts settlement on dislocation. Mints are role-gated and capped inside the token itself; an emergency role can pause and governance unpauses. In operations, the operator records and the router settles, with escrow deposit and withdrawal gated by different roles. Emissions are capped by supply policy and throttled by an on-chain sustainability ratio; vesting caps hold at or above existing schedules. A coalition is registered and active before escrow accepts its funds. Market executors hold no funds between calls. Wrapped RWLY exists only against RWLY locked on Polygon.

3.2 Engineering

- **Timelocked upgrades.** Proxy administration is owned by the protocol's own proxy manager. An upgrader role schedules; governance executes after a mandatory delay. Emergency upgrades require more than one approval.
- **Asymmetric pause.** An emergency role can pause transfers or minting; governance unpauses. Emergency transfer authority is capped at a small fraction of supply per call.
- **Price truth.** An independent market feed composed with the protocol's own on-chain time-weighted average, bounded and staleness-checked, with a three-level circuit breaker — warning, throttle, halt — that suspends every conversion path on dislocation.
- **Testing and deployment.** Unit, integration, fuzz and invariant suites across every layer and the bridge; static analysis in the pipeline; all layers and the bridge deployed and exercised on Polygon Amoy testnet. Mainnet deployment follows the external review.

3.3 Cross-chain bridge

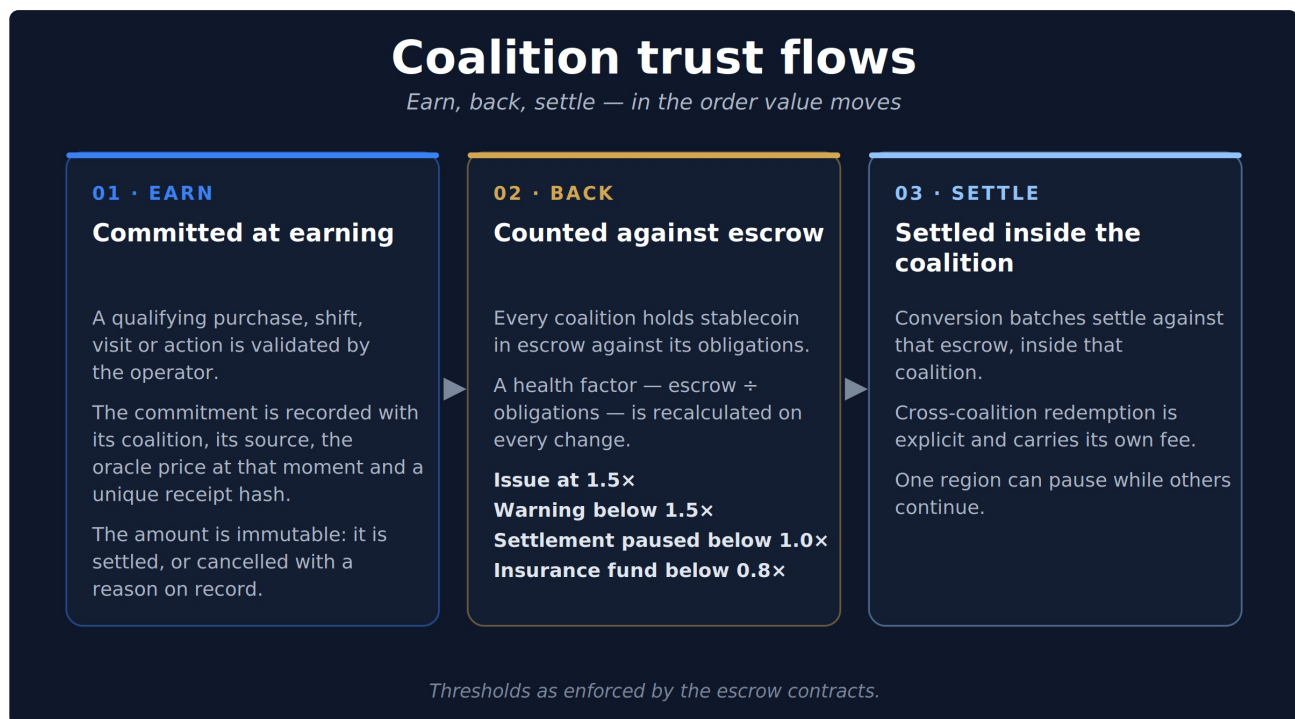
Wrapped RWLY on Arbitrum is a mint-and-burn representation created by locking RWLY on Polygon; wrapped supply equals locked supply. Transfers are bounded per transaction and per day, the bridge pauses independently of the protocol, and peer

changes are timelocked. The bridge is exercised on Arbitrum Sepolia; mainnet follows Polygon mainnet.

3.4 Integrations

Independent price feeds · concentrated-liquidity pools on Polygon as the first execution venue, with further executors built for later phases · cross-chain messaging adapters · operator-side receipt validation and point-of-sale integration at the application layer.

4. Mechanisms



4.1 Earn

The operator validates the event. The commitment is written with coalition, source class, committed RWLY, oracle price at earn time and receipt hash. Receipt hashes are unique, which prevents double claims on validated receipts. Commitments are append-only; the amount is immutable.

4.2 Back

The issuing coalition's obligations are counted against its escrowed stablecoin. The health factor drives status: active at 1.5 and above, warning at 1.1, critical at 1.0 (settlement paused), default below 0.8 (insurance fund activates after a 30-day grace period). The price used for the ratio resolves in three tiers — live dual-source oracle, cached last-known price, governance-set floor — so obligations are counted in full during an oracle outage.

4.3 Settle

Conversion batches settle against the coalition's escrow and proceed while cover remains at or above 1.0×. Cross-coalition redemption is explicit and carries a three-part fee. Cross-region settlement is multiplier-adjusted and paused per region. RWLY received through redemption vests for 48 hours before it moves. A circuit-breaker halt suspends every conversion path.

4.4 Compliance layer

The compliance layer implements KYC tiers, per-address daily limits denominated in RWLY, and a Travel-Rule-aware KYC threshold, all governance-tunable within bounded ranges. Protocol modules and consumer addresses are classed separately,

so limits apply to consumers and never to the protocol's own flows. The tier layer is exercised on testnet and activated per market; the emergency layer, the blacklist and regional controls are in force everywhere.

5. Token economics

5.1 Supply

Initial supply 100B. Future mintable supply 20B, released through per-category lifetime and annual caps enforced in the token contract, with an on-chain reservation required before any future-supply mint. Hard cap 120B. Every mint is checked against its category's allocation.

5.2 Initial allocation (100B)

Category	Amount	Share	Release
Ecosystem & Community	35B	35%	Demand-driven via treasury epoch caps (2% of pool per epoch); includes a 1.75B usage-rewards reserve earmark
Enterprise & Integration	20B	20%	Demand-driven via treasury pools for global, regional and bridge programs; anchors fund their escrow in stablecoin
Team & Development	15B	15%	Core team 9B: 48-month vesting, 12-month cliff, 0% at TGE. Marketing 3.5B and Operations 2.5B: vested; caps enforced on-chain
Staking Rewards Pool	10B	10%	Seven-year terminal emission schedule (\$5.5)
DEX Liquidity	8B	8%	40% (3.2B) deployable to DEX at TGE; 60% (4.8B) held as governance reserve
Seed & Private Investors	6B	6%	24-month vesting, 6-month cliff, 0% at TGE
Cross-Chain & Bridge	4B	4%	12-month vesting, 3-month cliff; released per chain activation
Strategic Reserve	2B	2%	24-month vesting, 6-month cliff; governance-controlled

Launch is DEX-only, with no public sale. Every category cap is a constant in the contracts.

Circulating supply at token generation is bounded by construction: at most 3.2B of liquidity is deployable; team, investor, strategic-reserve and bridge allocations are fully locked; ecosystem and enterprise pools release against demand through capped epochs.

5.3 Future mintable supply (20B)

Category	Lifetime cap
APAC regional mining	2.5B
Europe regional mining	2.0B
Americas regional mining	2.0B
MEA regional mining	1.5B
Program integration	6.0B
Staking supplement	4.0B
Future strategic reserve	2.0B

Each category also carries an annual cap. A future-supply mint requires an on-chain reservation checked against both caps before the token contract mints.

5.4 Fees

RWLY carries **no fee on ordinary transfers at launch**; governance may introduce one within a hard 5% ceiling written into the constants. Protocol fees apply to protocol work:

Operation	Fee
Point conversion	0.3%
Cross-coalition settlement	0.5%
Cross-border settlement	0.5%
Enterprise programs	0.2%
Staking-reward claims	2%
Bridge transfers	per bridge configuration

Coalitions that settle in RWLY rather than stablecoin receive a conversion-fee discount, governance-tunable between 10% and 50%. Collected fees are split across six on-chain buckets: liquidity 30%, treasury reserve 28%, staking rewards 20%, regional development 10%, protocol maintenance 10%, impact pool 2%. The split is governance-tunable within bounds fixed in the constants.

5.5 Staking and holding

Staked RWLY can be locked for 1, 3, 6, 12 or 24 months. Locking produces vote-escrowed weight (veRWLY) for governance and protocol multipliers, capped in the constants, and reduces the staker's protocol fees. A concentration cap limits any single staker's share of the staked total. Minimum stake, cooldown and early-exit terms are governance parameters within bounded ranges.

Staking rewards have three sources: the 20% staking share of protocol fees; the fixed, terminal 10B staking pool; and redistributed early-exit penalties. Pool emission is demand-driven — it fills the gap between fee revenue and a governance-set target, and stops when fee revenue meets the target. The pool declines every year, from 2.5B in year one to 0.78B in year seven, and is then exhausted.

The 4B staking supplement in future supply is throttled by an on-chain sustainability ratio: the closer fee revenue comes to funding rewards on its own, the less the supplement may emit, down to nothing. Emission is demand-driven and capped.

Long-held balances earn fee discounts at tenure thresholds set in the constants. Coalition operators post a slashable bond, with an exit notice period, to run a coalition.

5.6 Supply reduction

Any holder can burn. Treasury buyback-and-burn is a governed, role-gated path. Burnt supply is tracked on-chain and permanently removed from the cap.

6. Resilience

Scenario	Protocol response
Severe price dislocation	Circuit breaker escalates warning → throttle → halt; a halt suspends every conversion path and holds for the minimum period.
Concentrated sell pressure from allocated parties	Team, investor, strategic-reserve and bridge allocations are fully locked at TGE, with 6–12-month cliffs and 12–48-month vesting; caps enforced on-chain.
Prolonged low fee revenue	The staking pool is terminal and declines by schedule; the supplement throttles to zero as the sustainability ratio rises; every emission path is capped.
Regulatory action in one region	Regional settlement pauses per region while other regions continue. A protocol-wide emergency pause is available and suspends all transfers.
Contract defect	Asymmetric emergency pause; timelocked, multi-approval emergency upgrade; escrow insurance fund; 1%

	per-call cap on emergency transfers.
Oracle failure or manipulation	Dual-source composite, bounds, staleness rejection, flash-loan block delay; escrow falls back to cached price and then to a governance floor so obligations are counted in full.
Coalition insolvency	Settlement pauses below 1.0× cover; default below 0.8× activates the insurance fund after a 30-day grace period; a funding wallet is structurally unable to drain its own escrow.

7. Regional deployment framework

Regulation-ready first. The protocol deploys region by region, gated on regulatory readiness. A jurisdiction's framework sets the calendar.

Frameworks under evaluation. Middle East digital-asset regimes — UAE (VARA, ADGM, DIFC) and Bahrain (CBB) — and the European Union under MiCA.

United States. Excluded at token generation, pending a settled framework.

Where frameworks are still forming. The application operates in points and local currency, and the protocol follows the framework.

Regional structure in code. Four regions carry their own allocations and governance-set multipliers. One region can pause while others continue.

Points and tokens. Converting loyalty points into a transferable token can change how a program is treated under money-transmission and prepaid-access rules; the protocol activates where that treatment is clear.

Issuer. Any future token would be issued by a separate entity, disclosed at token generation.

8. Business model

The protocol earns from protocol work — conversion, cross-coalition and cross-border settlement, enterprise programs, staking-reward claims and bridge transfers — routed through the six fee buckets in §5.4. Application-layer subscription revenue accrues to the application. Coalition anchors fund their escrow in stablecoin.

Launch verticals for the reference application are places with many operators and one footfall: shopping malls and town centres, business parks and districts, airports and campuses. The protocol's builder proposition is that any operator or software company can build the same on the same settlement layer.

9. Roadmap

The roadmap is condition-gated: each stage begins when the prior stage's condition is met.

Stage	Condition	Status
Internal security review	Full contract set reviewed; findings closed in remediation sprints	Complete
Market-compatibility fix	Transfer path compatible with DEX pools; compliance posture set for mainnet	Complete
External review	Integration- and configuration-scoped external review signed off	In progress
Issuer formation	Token issuer entity finalised with counsel	In progress
Token generation	All of the above	Follows external review
Regional activation	A jurisdiction's framework confirmed ready	Region by region
Governance transition	Guided governance, then full community governance	After activation

10. Security and review

An internal security review of the full contract set is complete and its findings have been closed in remediation sprints. An external, integration- and configuration-scoped review precedes mainnet deployment and token generation.

Controls in code

Control	Status
Dual-source price with bounds, staleness rejection and flash-loan protection	In code
Three-level circuit breaker with minimum halt duration	In code
Coalition escrow health factor and insurance fund	In code
Per-category and future-supply caps in the token; vesting caps as covenants	In code
Timelocked upgrades; multi-approval emergency path; asymmetric pause	In code
Compliance tier layer (KYC tiers, daily limits)	In code; exercised on testnet; activated per market
Governance multisigs holding admin, emergency, treasury and regional roles, distinct from the deployer	Enforced by the role-health checks at deploy
External integration- and configuration-scoped review	In progress; precedes token generation

11. Trust framework and governance

Every contract in the protocol carries the same six principles in its header, and the code is written to them:

- **Transparency** — all state-changing operations emit indexed events.
- **Regional equity** — allocations and multipliers per region; every region participates.
- **Simplicity** — the code does exactly what is specified.
- **Human-centric security** — layered access control, time-delayed critical operations, emergency safeguards.
- **Capped tokenomics** — hard supply limits enforced in the token.
- **Code as covenant** — immutable core logic with modular upgradeability behind governance and a timelock.

Progressive decentralisation. Deployment keys hold bootstrap roles only during deployment and are retired before token generation. Administrative, emergency, treasury and regional roles are held by governance multisigs distinct from the deployer; the role-health check that enforces this gates the deploy runbook. Proxy administration is owned by the protocol's own proxy manager, with ownership transferable to governance. Governance moves in stages — team-led operations at activation, guided community governance, then full community governance — each gated on the prior stage.

Two governance domains. Protocol governance — fee structures, reward parameters within bounds, upgrades, treasury releases — is weighted by veRWLY. Ecosystem governance — reward catalogue, partner and coalition approvals, community programs — is weighted by participation and is implemented at the application layer today, with protocol integration on the roadmap.

12. Legal notice

RWLY is designed as a utility token for point conversion, coalition operations, governance and fee discounts within the protocol. As of September 2026 no RWLY token has been issued or offered. This document is not an offer, solicitation or recommendation to buy any token or security in any jurisdiction. RWLY will not be offered or distributed to US persons at token generation, and the protocol's conversion paths activate in a jurisdiction only when its framework for digital settlement is ready. Regulatory frameworks named in this document are frameworks under evaluation. Two patent applications are pending. Readers should review all risks before engaging with the protocol.

Appendix A — Contract inventory

The inventory of the thirty-five contracts by layer, and the testnet registry of deployed addresses, are published and kept current at rwly.live/protocol.

Appendix B — Glossary

Coalition — a group of operators issuing one program against one escrow. **Health factor** — escrow divided by outstanding obligations (1.0 = fully covered). **Earn-time commitment** — the on-chain record of a reward at the moment it is earned. **veRWLY** — vote-escrowed weight produced by locking RWLY. **Sustainability ratio** — the on-chain measure that throttles the staking supplement. **Two speeds** — the application runs everywhere; the protocol activates where a framework is ready.

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