DOCUMENT 01 · TOKEN DESIGN AND ECONOMICS

# MLMA *Tokenomics.*

A 500M hard-capped digital tool coordinating the validation network, with a 60M eight-year emission taper into permanent revenue-funded operation, and a 45 / 20 / 15 / 20 revenue split to a 250M burn floor.

| STATUS | FRAMEWORK | MAINNET TARGET | CARDANO PREPROD |
|---|---|---|---|
| *Pre-Launch* | Six-Layer DePIN | Q4 2026 | Active |

HARD CAP
500M MLMA

EMISSIONS
60M · 12%

WINDOW
Years 1-8

BURN FLOOR
250M circulating

TOKEN CHAIN
Base (ERC-20)

PRECISION
18 decimals

MLMA is a digital tool coordinating a decentralized environmental data network. Hard-capped at 500M, with an eight-year emission window that tapers smoothly into permanent revenue-funded operation.

**Contents · 12 sections** 01 Supply at a glance · 02 Token identity · 03 Primary functions · 04 Chain architecture · 05 Supply allocation · 06 Emission schedule · 07 Revenue distribution · 08 veMLMA governance · 09 Stewardship Pool · 10 Revenue sustainability · 11 Risk factors · 12 Disclaimers

This page summarizes the token design specified in the MLMA Tokenomics Whitepaper (v1). MLMA is a digital tool: an asset used to perform a function in the Mālama validation network, the validation credential and access right, used and consumed in operation rather than held as an investment instrument. It is used for fee payment, staking, governance (with the PONO credential), and validator distributions.

§ 01

## Supply at a *glance*

| METRIC | VALUE |
|---|---|
| Total supply cap | 500,000,000 MLMA · hard ceiling · immutable |
| Emission window | Years 1 to 8 · smooth taper |
| Total network emissions | 60,000,000 MLMA · 12% of supply · KPI-scaled |
| Genesis 200 operator pool | 25,000,000 MLMA · 5% of supply |
| Per Genesis operator | 125,000 MLMA · milestone-conditional vesting |
| Stewardship Pool | 8,750,000 MLMA · 1.75% of supply · FPIC-gated |
| Post-emission governance reserve | 131,250,000 MLMA · 26.25% of supply |
| Burn floor | 250,000,000 MLMA circulating supply |
| Years 9+ emissions | 0 · permanent revenue-funded operation |

§ 02

# Token *identity*

| | |
|---|---|
| Name | Mālama |
| Language of origin | ʻŌlelo Hawaiʻi (Hawaiian) |
| Meaning | To care for, to tend, to protect, to preserve |
| Ticker | MLMA |
| Precision | 18 decimals |
| Standard | ERC-20 on Base (Coinbase L2, EVM-equivalent) |
| Classification | Digital tool under S7-2026-09 (see §12) |

§ 03

# Primary *functions*

| FUNCTION | USE | RECIPIENT |
|---|---|---|
| Validator distribution | Receive MLMA for validating SaveCards and compute packets | Network operators |
| Governance | veMLMA lock plus PONO credential for DAO voting | Operators with PONO |
| Fee payment | Protocol fees payable in MLMA or stablecoin | Protocol treasury |
| Staking | Lock as veMLMA for enhanced distribution multipliers | veMLMA stakers |

MLMA is used to perform these functions, not held as a passive instrument. Fees are payable in MLMA or stablecoin, and staker distributions are paid in stablecoin, so the token's value tracks functional use rather than managerial-effort-driven return.

§ 04

# Chain *architecture*

Two chains with separation of concerns. Cardano handles environmental data. Base handles the MLMA token. The chains are not bridged at TGE.

| LAYER | CHAIN | FUNCTION |
|---|---|---|
| Environmental data archival | Cardano | SaveCard custody (CIP-68), 60-second Merkle anchoring, geographic consensus attestation. Deterministic finality at predictable cost. Live since June 2024. |
| MLMA token issuance | Base | ERC-20 MLMA, KPI-gated minting policy, burn mechanism, vesting validators. |
| Token liquidity | Base | Uniswap V3, Aerodrome, eventual CEX listings. |
| veMLMA staking | Base | Time-locked staking, vote weight, revenue distribution. |
| PONO credential | Base | Soulbound (non-transferable) ERC-721. |
| Cross-chain bridging | None at TGE | Optional Phase 2 if a credible bridge architecture matures. |

Cardano is selected for archival data because of deterministic finality, predictable fees, and the existing Node #1 track record (continuous operation since June 2024 with 2,786+ SaveCards anchored to Cardano preprod). Base is selected for the token because of EVM-native liquidity depth, a mature audit ecosystem for Solidity contracts, and broader institutional access. Both chains are selected for the function they perform best.

§ 05

# Supply *allocation*

| POOL | ALLOCATION | TOKENS | NOTES |
|---|---|---|---|
| Community | 45.0% | 225,000,000 | Sub-itemized below. |
| Investors | 20.0% | 100,000,000 | Seed SAFE plus token side letter. 12-month cliff, 48-month S-curve vesting. |
| Insiders (Team & Advisors) | 20.0% | 100,000,000 | 12-month cliff, 48-month S-curve vesting. |
| Foundation / Treasury | 15.0% | 75,000,000 | LP deployment (45M) plus operating reserve (30M). Replenished by 20% of protocol revenue, rising to 65% post-burn-floor. |
| Public Sale | 0% | 0 | None planned at TGE. Regulatory-conservative posture. |
| Total | 100% | 500,000,000 | Hard cap, immutable. |

The allocation is deliberately community-weighted, above investors and insiders, in line with the distribution profiles of the strongest DePIN networks.

**Community sub-allocation**

| COMPONENT | % OF SUPPLY | TOKENS | FUNCTION |
|---|---|---|---|
| Network emissions (Years 1 to 8) | 12.0% | 60,000,000 | KPI-scaled validator distributions across the 8-year window |
| Genesis 200 operator allocation | 5.0% | 25,000,000 | 200 hex zones × 125,000 MLMA each, milestone-vested |
| Stewardship Pool | 1.75% | 8,750,000 | Indigenous and Native community-led deployments, FPIC-gated |
| Post-emission governance reserve | 26.25% | 131,250,000 | Unreleased after Year 8. Governance-directed (PONO supermajority). |
| Community total | 45.0% | 225,000,000 | |

The post-emission governance reserve is not committed to emissions and cannot be released as automatic validator distributions. It is governance-controlled and subject to PONO supermajority voting. Genesis, Stewardship, and the eight-year emission schedule are fixed; the community-weighting accrues to this reserve.

§ 06

# Emission schedule · 8-year smooth *taper*

Cold-start emissions for eight years with a smooth taper. Zero emissions from Year 9, with all distributions funded by protocol revenue.

| YEAR | CEILING | MONTHLY CEILING | % OF SUPPLY |
|---|---|---|---|
| 1 | 12.0M MLMA | 1.000M / mo | 2.4% |
| 2 | 14.0M MLMA | 1.167M / mo | 2.8% |
| 3 | 12.0M MLMA | 1.000M / mo | 2.4% |
| 4 | 9.0M MLMA | 0.750M / mo | 1.8% |
| 5 | 6.0M MLMA | 0.500M / mo | 1.2% |
| 6 | 4.0M MLMA | 0.333M / mo | 0.8% |
| 7 | 2.0M MLMA | 0.167M / mo | 0.4% |
| 8 | 1.0M MLMA | 0.083M / mo | 0.2% |
| 9+ | 0 | 0 | 0% |
| Total | 60.0M MLMA | | 12.0% |

**KPI scaling function (smooth).** Monthly release is governed by a continuous scaling function rather than a step gate:

```
emission_release_pct = max(0.25, min(1.0, weighted_growth_index / target_growth_index))
```

where weighted_growth_index is the equal-weighted geometric mean of three growth metrics: active validator count, SaveCard count, and veMLMA TVL, each month-over-month. Target composite growth steps down from 5% (Year 1) to 1.5% (Years 6 to 8). This produces a 25% release floor (even in zero growth), a 100% ceiling (when growth meets target), and linear interpolation between, eliminating the threshold-edge gaming of step gates.

**Anti-gaming.** Validator count is weighted by hardware-attested signing activity in the prior 30 days (unsigned new registrations do not count, and KYB prevents trivial sybils). SaveCard count is normalized by hardware unit count and capped at the per-sensor rate in the Genesis hardware specification. veMLMA TVL is weighted by lock duration (3-month locks contribute 0.25×, 24-month locks 2.0×). Unused ceiling tokens roll into the post-emission governance reserve, bound by the 500M hard cap.

**Plan to P50, not ceiling.** Operator economics should be planned against probable realization.

| PERIOD | CEILING | P50 EXPECTED | P25 CONSERVATIVE | P10 STRESS |
|---|---|---|---|---|
| Year 1 | 12.0M | 9.0M (75%) | 7.2M (60%) | 5.4M (45%) |
| Year 2 | 14.0M | 11.2M (80%) | 9.1M (65%) | 7.0M (50%) |
| Year 3 | 12.0M | 9.6M (80%) | 7.8M (65%) | 6.0M (50%) |
| Year 4 | 9.0M | 7.2M (80%) | 5.85M (65%) | 4.5M (50%) |
| Years 5-8 cum. | 13.0M | 10.4M (80%) | 8.45M (65%) | 6.5M (50%) |
| Total expected | 60.0M | 47.4M (P50) | 38.4M (P25) | 29.4M (P10) |

§ 07

# Revenue *distribution*

Protocol revenue is distributed across four sinks. After the 250M circulating-supply burn floor is reached, the burn allocation redirects to the Foundation operating reserve.

**Pre-floor (until 250M circulating)**

| SINK | SHARE | MECHANISM |
|---|---|---|
| Burn | 45% | Permanent removal via transfer to null address |
| Operator distribution | 20% | Monthly, weighted by data volume, uptime, geographic multiplier |
| veMLMA staker distribution | 15% | Monthly, weighted by lock duration and PONO eligibility |
| Foundation operating reserve | 20% | Treasury inflow, governance-bound spending |

**Post-floor (after 250M reached)**

| SINK | SHARE | MECHANISM |
|---|---|---|
| Burn | 0% | Burns cease; floor permanent |
| Operator distribution | 20% | Unchanged |
| veMLMA staker distribution | 15% | Unchanged |
| Foundation operating reserve | 65% | Receives the 45% redirected from burn |

Burned tokens are sent to a null address on Base and cannot be recovered. Each burn transaction records date, block height, amount, MLMA spot price at execution, source revenue feed, and transaction hash.

§ 08

# veMLMA *governance*

**Lock tiers**

| LOCK DURATION | VOTE WEIGHT | DISTRIBUTION MULTIPLIER |
|---|---|---|
| 3 months | 0.25× | 0.5× |
| 6 months | 0.5× | 1.0× |
| 12 months | 1.0× | 2.0× |
| 24 months | 2.0× | 3.0× |

Maximum lock is 24 months. Locks are non-transferable; tokens return at expiry.

**PONO credential.** PONO is a non-transferable on-chain credential (soulbound ERC-721 on Base) issued automatically to operators meeting KYB, uptime, and operational criteria. Holding veMLMA alone is not sufficient to vote. Summary criteria: KYB with UBO disclosure (above 25%) and sanctions screening; active hardware with 99.0%+ uptime, 1,000+ signed readings per 30-day window, 95%+ Merkle anchor participation, 100% geographic coherence; a 90-day qualifying period; annual KYB renewal. Full criteria are in the Operator Guide.

**10% UBO governance cap.** No single beneficial owner controls more than 10% of PONO-weighted vote on any individual proposal. Coordinated entities (common control, proxy arrangements) are aggregated. Vote weight above the cap is forfeited for that proposal. This prevents an acquirer from consolidating operators to translate economic concentration into governance dominance. The cap depends on accurate UBO and proxy disclosure; non-disclosure is grounds for PONO revocation.

**Governance thresholds**

| DECISION TYPE | THRESHOLD | TIMELOCK |
|---|---|---|
| Methodology / validator parameter changes | > 50% | 7 days |
| Fee schedule adjustments | > 66% | 14 days |
| Critical economics / treasury actions | > 66% | 14 days |
| Emergency protocol pause | Foundation multisig 3-of-5 | 0 days |
| Hard cap modifications | NOT MODIFIABLE | N/A |
| Burn rate / burn floor | > 75% | 30 days |
| Revenue distribution percentages | > 75% | 30 days |
| UBO cap modifications | > 66% | 14 days |
| PONO revocation | > 66% | 14 days |
| Stewardship Pool regional activation | > 66% + cultural advisor sign-off | 14 days |
| Post-emission reserve deployment | > 66% | 14 days |

§ 09

# Stewardship *Pool*

8.75M MLMA (1.75% of supply) allocated from the Community pool for operator deployments on Indigenous lands or in partnership with Native communities.

| PARAMETER | SPECIFICATION |
|---|---|
| Pool size | 8.75M MLMA |
| Disbursement | Over 5 years, pari passu with general emissions, KPI-scaled identically |
| Eligibility | Operators on Indigenous lands or in partnership with Native communities |
| Multiplier | 1.5× stewardship multiplier on validation distributions for qualifying operators |
| Governance | Cannot be redirected to non-stewardship use by any governance mechanism |
| Regional activation | Requires FPIC consultation, cultural advisor sign-off, and governance supermajority |

§ 10

## Revenue *sustainability*

From Year 9 onward, all operator distributions come from protocol revenue. Nine commercial verticals contribute, all running on the same shared hardware trust stack:

1. Carbon verification fees (per-SaveCard validation on credit issuance)
2. AI compute emissions verification (MRAA-01 per-rack Scope 2 attestation)
3. Energy-market data licensing (grid and telemetry subscriptions)
4. Parametric insurance triggers (per-policy and per-settlement data fees)
5. EUDR supply chain attestation (per-region deforestation-free verification)
6. Prediction market resolution (environmental event resolution fees)
7. Smart agriculture SaaS (soil and field intelligence subscriptions)
8. Smart City (municipal and grid environmental data procurement)
9. $LCO_2$ / $VCO_2$ settlement fees (0.5 to 2% on conversions)

**Modeled revenue.** Year 5 modeled total revenue is $147.44M, of which $68.44M is recurring oracle and settlement fees across the nine verticals; the balance is hardware sales and recurring SaaS on the installed base. Operators pay fees to the network independent of MLMA price. This is the structural departure from inflation-dependent DePIN models. All figures are modeled base-case estimates, not commitments, and the protocol publishes no price forecasts or projected per-operator distributions.

§ 11

## Risk *factors*

**Token price risk.** MLMA value may decline due to weak demand, slower-than-forecast deployment, broader crypto conditions, or competition. The emission schedule and hard cap are immutable; the protocol cannot issue additional tokens to defend price.

**Validator participation risk.** Operators may not deploy if anticipated distributions appear insufficient. Mitigation: the Genesis 1.5× multiplier for early movers, geographic and demand tiers for high-value zones, low hardware cost, and the 8-year emission tail.

**Year 1 to Year 3 revenue ramp risk.** The early years are emission-dependent. If revenue underperforms, the smooth 8-year taper provides longer runway than a cliff, but operator economics depend on the revenue transition completing by Year 4 to 5.

**KPI scaling underperformance.** Sustained periods at the 25% floor reduce monthly release and compress per-validator distributions.

**Smart contract risk.** Solidity contracts on Base and Aiken contracts on Cardano are pending audit. The Foundation multisig provides an emergency pause; audit completion is required before mainnet migration.

**Supply chain risk.** The primary secure element is an ATECC608B-class part. Multi-vendor alternatives (NXP SE050, Infineon OPTIGA Trust M, STMicroelectronics STSAFE-A110, Analog Devices DS28E38) are qualified at the protocol level, with a governance-managed whitelist.

§ 12

# Disclaimers

**Not legal, investment, or tax advice.**

MLMA is classified as a digital tool under the March 17, 2026 SEC-CFTC Joint Interpretation (S7-2026-09): an asset used to perform a function in the network, not held as an investment instrument. Regulatory classification depends on facts and circumstances and varies by jurisdiction.

Mālama Labs is engaged with qualified securities counsel on regulatory analysis. No public token offering will proceed in the US until that analysis is complete. This page does not constitute legal, investment, or tax advice. Consult qualified counsel before participating.

Mālama does not publish MLMA price forecasts or projected operator distributions. Token value is driven by protocol utility and market conditions and may go up or down. Participants should not acquire MLMA with the expectation of profit.

*Mālama Labs, Inc. · MLMA Tokenomics v1 · Aligned to Whitepaper v1 · June 2026*