DOCUMENT 05 · DATA DEMAND SCORE METHODOLOGY

Data Demand *Score*.

A five-component score from zero to one hundred measuring the commercial, regulatory, and research value of hardware-signed data from each hex, recomputed quarterly, feeding the bounded reward framework.

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

STATUS
v1.0 · ratified 2026-05-23

SCORE RANGE
0 to 100

COMPONENTS
5 weighted inputs

UPDATE CADENCE
Quarterly

MULTIPLIER RANGE
0.70× to 1.30×

NEXT REVIEW
Q2 2027

Each Genesis 200 hex carries a Data Demand Score between 0 and 100, measuring how much commercial, regulatory, and research buyers would pay for hardware-signed environmental data from that geographic cell. Five weighted components, quarterly recompute, bounded multiplier.

This is the canonical specification for the Data Demand Score. It is ratified against Whitepaper v1, MLMA Tokenomics v1, and the Pricing Methodology v1.0. The score feeds the operator reward formula in the Genesis Pricing page.

§ 01

What the score *measures*

Each hex carries a Data Demand Score from 0 to 100, reflecting the relative value of cryptographically-signed environmental data from that cell, as measured by quantifiable demand signals from commercial, regulatory, and research consumers.

It is not a measure of how much data exists in a hex today; it measures how much that data is worth to verified buyers when it exists. A remote area with no current sensors can score high if its data would resolve high-value contracts, satisfy regulatory disclosure, or close scientific coverage gaps.

The score is one input to the reward calculation, combined with the Hex Type and Genesis Year 1 multipliers under the bounded framework in the Genesis Pricing page. It does not directly determine final earnings; the cohort normalization layer keeps total Genesis rewards within the 25M MLMA operator pool regardless of how scores distribute. The score is computed at hex creation and recomputed quarterly based on underlying demand, not on operator behavior, so operators cannot earn more by inflating signal volume.

§ 02

What feeds the *score*

Five weighted components, each scored 0-100, blended into the final score:

COMPONENT	WEIGHT	SCORES HIGHER WHEN
Parametric insurance trigger density	25%	Active parametric markets with resolvable triggers (crop, wildfire, flood, supply-chain)
Regulatory monitoring demand	25%	EUDR, CSRD ESRS E1, SEC climate, or AI compute mandates apply to the hex geography
Scientific coverage gap	20%	Undermonitored area with little existing NOAA, EPA, WMO, or academic coverage
Prediction market resolution density	15%	Active prediction markets resolve to hex-verifiable environmental signals
AI compute disclosure obligations	15%	Data center clusters within or adjacent to the hex

§ 03

How the score *updates*

Computed at hex creation and recomputed quarterly (March 31, June 30, September 30, December 31), reflecting demand signals as of the computation date: parametric market and contract changes, new or sunsetting regulatory frameworks, scientific monitoring infrastructure changes, AI compute facility additions or closures, and prediction market activity over the prior 90 days. Score changes appear in the Node Command Center dashboard, with notification when a hex moves more than 10 points either direction. A hex score does not change based on operator performance, uptime, or data quality; those gate compensation through other mechanisms.

§ 04

How the score affects operator *compensation*

The score feeds the bounded reward framework in the Genesis Pricing page:

```
Calculated Eligibility = Base Allocation (125,000)
                       × Genesis Year 1 Multiplier (1.5×)
                       × Hex Type Multiplier (0.95× to 1.30×: Urban Core, Urban, Suburban, Rural, Remote)
                       × Data Demand Score Multiplier (0.70× to 1.30×)

DDS Multiplier = 0.70 + (DDS × 0.006)
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DATA DEMAND SCORE	DDS MULTIPLIER
0	0.70×
25	0.85×
50	1.00×
75	1.15×
100	1.30×

The bounded form keeps low-DDS hexes above a 0.70× floor (preserving the geographic expansion incentive) and caps high-DDS hexes at 1.30× (preventing outsized rewards when compounded with the other multipliers).

Cohort normalization. Calculated Eligibility is not the final earned amount. The Genesis 200 operator pool is capped at 25M MLMA (per Whitepaper v1). After all 195 external operators' eligibilities are summed, a cohort-wide factor scales the total to exactly 25M:

```
Final Earned MLMA = Calculated Eligibility × (25,000,000 / Total Cohort Calculated Eligibility)
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The score determines an operator's relative position within the cohort, not an absolute earnings promise. Higher-DDS operators earn proportionally more within the cohort, but the total pool stays fixed.

§ 05

Worked *examples*

Calculated Eligibility for representative hexes (before normalization):

- Idaho Remote, DDS 57: 125,000 × 1.5 × 1.30 × 1.042 = 254,000 MLMA

- Tokyo Urban, DDS 93: 125,000 × 1.5 × 1.00 × 1.258 = 235,875 MLMA
- London Suburban, DDS 71: 125,000 × 1.5 × 1.10 × 1.126 = 232,196 MLMA
- NYC Urban, DDS 91: 125,000 × 1.5 × 1.00 × 1.246 = 233,625 MLMA

The framework produces a tighter spread across hex classes than the multipliers alone suggest, because cohort normalization pulls all operators toward the 25M aggregate cap. After normalization, these land in the ~123,000 to ~135,000 range depending on actual cohort composition.

§ 06

What the score does not *capture*

Operator performance. Uptime, data quality, PONO qualification, and tamper history are tracked separately and gate compensation through milestone vesting and the forfeited-MLMA recycling mechanism, not the score.

Buyer-specific deal economics. Revenue from specific commercial deals is distributed through the USDC validator fee system, not through Data Demand Score adjustments. See Validator Fees.

Future demand events. The score is a snapshot at computation time. New regulatory frameworks, climate events, or buyer relationships can shift demand between recomputes. Expect quarter-over-quarter movement.

§ 07

Reviewing or disputing a *score*

An operator who believes their hex is materially mis-scored can request a re-evaluation through the Operator Discord or the Node Command Center support form, identifying the components believed mis-scored. The Mālama data team reviews against current methodology and either confirms or corrects. Corrections apply prospectively, not retroactively. Requests are reviewed within 30 days, with a quarterly aggregate report on requests, categories, and corrections.

§ 08

Methodology change *control*

Components, weights, and computation logic can change as the network matures. Material changes follow this process: posted to the Operator Forum for a 14-day comment period; operator feedback incorporated; revised methodology published with at least 30 days notice; the first recompute under the new methodology communicated by email at least 14 days ahead. Governance follows the Genesis Pricing process; the Pricing Committee reviews this methodology on an annual cadence.

Provenance. This methodology is published as v1.0, ratified against: Whitepaper v1 (the 25M Genesis 200 operator pool cap); MLMA Tokenomics v1 (the 15/15/20/20/30 milestone vesting that gates eligibility); the Pricing Methodology v1.0 (the multiplier framework and cohort normalization); and the Token Team Ratification of 2026-05-23 (the bounded formula: 0.70 floor, 0.006 slope, 1.30 cap). The five-component weighting is first-pass and subject to review as actual demand signals are measured against initial assumptions, with the first review scheduled for Q2 2027.

DOCS · 05 · Data Demand Score Methodology · v1.0 · Mālama Labs, Inc. · Ratified 2026-05-23 · Aligned to MLMA Tokenomics v1 and Whitepaper v1 · Next review Q2 2027