

Atho Final Specs (500 Model)

Date: 2026-04-15

This file is the canonical Markdown policy snapshot for the active 500 atoms/vB fee model and updated supply/staking policy.

Core Policy

- Base issuance path: 400,000,000 ATHO
- Hard max supply cap: 500,000,000 ATHO
- Protected supply floor: 21,000,000 ATHO
- Unit model: integer atoms
- Conversion: 1 ATHO = 1,000,000,000 atoms

Block and Era Structure

- Block time target: 120 seconds
- Blocks/year: 262,800
- Era size: 2,000,000 blocks
- Tail start height: 17,000,000
- Tail start time from genesis: ~64.69 years

Reward schedule:

- Era 1: 100 ATHO/block
- Era 2: 50 ATHO/block
- Era 3: 25 ATHO/block
- Era 4: 12.5 ATHO/block
- Era 5: 6.25 ATHO/block
- Era 6: 3.125 ATHO/block
- Era 7: 1.5625 ATHO/block
- Era 8: 0.78125 ATHO/block
- Transition: 0.78125 ATHO/block for 1,000,000 blocks
- Tail: 0.1953125 ATHO/block

Bootstrap and totals:

- Bootstrap allocation: 781,250 ATHO at block 1
- Pre-tail subsidy path: 399,218,750 ATHO
- Pre-tail total including bootstrap: 400,000,000 ATHO
- Supply-closure check: $399,218,750 + 781,250 + 100,000,000 = 500,000,000$
- Tail annual issuance: 51,328.125 ATHO/year
- Subsidy clipping: clipped by remaining headroom under 500M
- After cap reached: subsidy = 0

Fee Policy

- Fee floor: 500 atoms/vB
- ATHO equivalent: 0.0000005 ATHO/vB
- Scientific notation: $5e-7$ ATHO/vB
- Minimum transaction fee: 200,000 atoms
- Dust limit: 20,000 atoms (1/10 of min tx fee)

Transaction policy metric:

- weight = base_bytes * 3 + total_bytes
- vsize = ceil(weight / 4)

- vsize is used for mempool admission, miner packing, and tx policy.

Block capacity:

- Effective vbyte cap per block: 3,500,000 vB
- Max block weight: 14,000,000
- Max block base cap: 3,500,000 bytes

Fee Routing

Pre-tail:

- Total routed to consensus pool: 40%
- Miner bucket: 20%
- Stake bucket: 20%

Post-tail:

- Miner bucket: 25%
- Stake bucket: 30%
- Burn-targeted share: 45%
- Burn clipping: clipped by 21M floor headroom

500 atoms/vB Annual Math

Full-utilization totals:

- Total annual fees: 459,900 ATHO/year
- Miner pool post-tail: 114,975 ATHO/year
- Stake pool post-tail: 137,970 ATHO/year
- Burn path post-tail: 206,955 ATHO/year
- Tail subsidy: 51,328.125 ATHO/year
- Net supply change at 100% utilization: -155,626.875 ATHO/year

Per block at full utilization:

- Total fees/block: 1.75 ATHO
- Miner pool/block: 0.4375 ATHO
- Stake pool/block: 0.525 ATHO
- Burn/block: 0.7875 ATHO
- Tail subsidy/block: 0.1953125 ATHO
- Net burn/block after tail: 0.5921875 ATHO

Post-tail net annual formula:

- $\Delta_{\text{supply}} = 51,328.125 - (206,955 * \text{utilization})$

Neutral utilization point:

- ~24.802%

Emission Milestone Timing

- Tail headroom to hard cap: 100,000,000 ATHO.
- Tail blocks required to reach hard cap: 512,000,000.
- Last positive-subsidy height: 528,999,999 (~2,012.94 years from genesis).
- First zero-subsidy height: 529,000,000 (~2,012.94 years from genesis).
- Time from tail start (17,000,000) to zero subsidy: ~1,948.25 years.

Floor timing (burn-enabled scenarios, sustained utilization):

| Sustained utilization | Circulating at hard cap | Additional blocks to floor after 529,000,0

| Approx years from genesis to floor | | | |
|------------------------------------|------------------|---------------|-----------|
| ---: ---: ---: ---: | | | |
| 25% | 399,200,000 ATHO | 1,921,015,874 | ~9,322.74 |
| 50% | 298,400,000 ATHO | 704,507,937 | ~4,693.71 |
| 75% | 197,600,000 ATHO | 299,005,292 | ~3,150.71 |
| 100% | 96,800,000 ATHO | 96,253,969 | ~2,379.20 |

Notes:

- No-burn scenarios do not reach floor via protocol burn.
- Any burn-enabled utilization above 0% eventually reaches floor after subsidy shutdown.

Staking Policy (Updated)

- Minimum stake: 20 ATHO
- Maximum per staking address: 1,000 ATHO
- Maximum new ATHO entering staking per rolling window (network-wide): 50,000 ATHO per 21,600 blocks
- Maximum total staked network-wide at any time: 75,000,000 ATHO
- Unstake finalization: 180 days worth of blocks (129,600 blocks)
- Reward accrual after unstake request: stops on request
- Reward split: proportional to active staked share

Derived stake throughput:

- Max new staking per year: 608,333.333 ATHO/year (50,000 * 262,800 / 21,600)
- Time from zero to 75M cap (at max inflow): ~123.29 years

Bonding Policy

- Minimum active mining bond: 25 ATHO
- Maximum per bond address: 30 ATHO
- Bond release period: 14 days worth of blocks (10,080 blocks)
- Global bond cap: none
- Slashing buffer: 5 ATHO
- Miner eligibility loss: below 25 ATHO until topped back up

Final Summary

- Base supply path: 400M ATHO
- Hard cap: 500M ATHO
- Protected floor: 21M ATHO
- Fee floor: 500 atoms/vB
- Post-tail routing: 25% miners / 30% stakers / 45% burn
- Neutral utilization: ~24.802%
- Minimum stake: 20 ATHO
- Max stake per address: 1,000 ATHO
- Max new staking per rolling window: 50,000 ATHO / 21,600 blocks
- Max total staked: 75M ATHO
- Unstake delay: 180 days
- Rewards stop on unstake request: yes
- Minimum mining bond: 25 ATHO
- Max bond per address: 30 ATHO
- Bond release period: 14 days
- Global bond cap: none