



CMBI Ethereum Staking Index Methodology

Version 1.1

Last Revised: May 20, 2025

Contents:

CMBI Ethereum Staking Index Methodology	1
1 Introduction	3
1.1 Index Objective	3
1.2 Administration	3
2 Other Documents	4
3 Data Inputs	4
3.1 Network Data	4
3.1.1 Consensus Layer	4
3.1.2 Eligible Validators	4
3.1.3 Priority Fees	5
3.2 Price Data	5
4 Calculation Algorithm	5
5 Appendix: Reward Rate Calculation	6
6 Appendix: Nominal Staking APR	7
7 Appendix: Nominal Staking APY	7
8 Change Log	8

1 Introduction

Coin Metrics' mission is to provide transparent and actionable cryptoasset market and network (on-chain) data. As one of the early providers of both market and network data, Coin Metrics is uniquely positioned to provide investors with a high quality suite of crypto indexes.

The Coin Metrics Bletchley Indexes ("CMBI") are designed to provide cryptoasset markets with a diverse range of market capitalization-weighted, equal-weighted and network data-weighted indexes to measure performance of the largest and most utilized global cryptoassets. CMBI products are operated and calculated by Coin Metrics and are designed to serve as an independent, transparent, and comprehensive measure of cryptoasset market performance.

Indexes are calculated using a robust and resilient methodology that is resistant to manipulation and adheres to international best practices for financial benchmarks, including the International Organization of Securities Commissions' (IOSCO) Principles for Financial Benchmarks. The Coin Metrics Oversight Committee (the "Oversight Committee") protects the integrity of CMBI and ensures the indexes serve as a source of transparent and independent benchmarking.

1.1 Index Objective

The CMBI Ethereum Staking Index (CMBIETHS) reflects the performance an investor would expect from purchasing and staking Ether. The total return consists of the hourly price return of Ether and the hourly yield reflecting compounded rewards earned from the Ethereum blockchain.

1.2 Administration

Coin Metrics serves as the administrator for CMBI products and has primary responsibility for all aspects of the index construction process, including development, definition, determination, dissemination, operation, and governance. All aspects of index

production are carried out by Coin Metrics; however, Coin Metrics may rely on third party agreements to obtain data inputs for index calculation.

Coin Metrics ensures that transparency in relation to significant decisions and associated rationale are published and made available to external stakeholders. Data contingency and exclusion rules are in place to handle certain extraordinary circumstances and external factors beyond the control of Coin Metrics.

2 Other Documents

The CMBI Benchmarks are collectively governed by policies described in [CMBI Index Policies](#), which outline the administration, oversight, conflicts of interest, significant changes and terminations, recalculations, internal controls, complaints, record retention, and compliance policies.

The CMBI Benchmarks are supervised by the [CMBI Governance Committee Charter](#), which defines the roles and responsibilities of the Oversight Committee and the Index Committee.

3 Data Inputs

3.1 Network Data

The CMBI Ethereum Staking Index sources its yield information from Coin Metrics Network Data. Please refer to the following links for more information:

- <https://docs.coinmetrics.io/network-data/network-data-overview/staking/yield>
- <https://coinmetrics.io/company-news/eth-yield-inflation-metrics/>

3.1.1 Consensus Layer

Network penalty and slash amounts are subtracted from the sum of native units issued on the Consensus Layer during the Observation Window.

3.1.2 Eligible Validators

Supply from validators that were active during the Observation Window, subject to a one-day lag. The lag considers the amount of ETH staked at the start of the Observation Window. This quantity is held constant throughout the calculation period.

3.1.3 Priority Fees

Ethereum's transaction fees ("gas fees") are composed of Base Fees, which are burned, and Priority Fees, which are awarded to validators. Priority fees are optional and showcase the short-term demand for block space (i.e., transaction settlement) on the network.

3.2 Price Data

The price of Ether is benchmarked by the CMBI Ethereum Index, CMBIETH. Refer to <https://indexes.coinmetrics.io/cmbieth> for more information.

4 Calculation Algorithm

CMBIETHS is calculated every hour. At the calculation time t , CMBIETHS is calculated as:

$$CMBIETHS_t = CMBIETHS_{t-1} * \left(\frac{CMBIETH_t}{CMBIETH_{t-1}} + ((1 + StakingAPYNominal_t)^{\frac{1}{8760}}) - 1 \right)$$

Where,

$CMBIETHS_{t-1}$ = Previous CMBIETHS (total return) index value at time $t-1$

$CMBIETH_t / CMBIETH_{t-1}$ = Hourly price return of Ether (as measured by CMBIETH)

$StakingAPYNominal_t$ = Annualized compound return yield for staking Ether

$((1 + StakingAPYNominal_t)^{\frac{1}{8760}}) - 1$ = Conversion of the annualized yield to an hourly rate that accounts for compounding.

*The Ethereum Pectra Upgrade (May 7, 2025), introduced changes to staking mechanics that affected index calculations. This methodology version synchronizes calculations across the implementation period (May 7, 2025 to June 2, 2025) to ensure consistency and accurate representation of staking returns. Historical calculations have been aligned with the current methodology to maintain index continuity.

5 Appendix: Reward Rate Calculation

Ethereum's staking rate is expressed as a periodic rate that quantifies the annualized return awarded to eligible validators who staked Ether on the Ethereum blockchain. The staking rate is derived from Consensus Layer rewards accrued over a rolling one-day observation window. On days where clocks adjust for daylight savings time, the observation window may be shorter or longer than other days.

$$StakingRate_i = \frac{IssContNtv_i - PenaltyNtv_i - SlashedNtv_i + FeePrioTotNtv_i}{SplyActStkedNtv_{i-1}}$$

where:

$IssContNtv_i$: = sum of native units issued on the Consensus Layer during hour i of the Observation Window

$PenaltyNtv_i$: = total amount of penalties enforced by the protocol during hour i of the Observation Window

$SlashedNtv_i$: = total amount of penalties enforced by the protocol during hour i of the Observation Window

$FeePrioTotNtv_i$: = total priority fees paid during hour i of the Observation Window

$SplyActStkedNtv_i$: = sum of all balances from actively participating validators during hour i of the Observation Window.

6 Appendix: Nominal Staking APR

Ethereum's nominal staking annual percentage rate is expressed as an annualized rate that quantifies the return for awards to eligible validators who staked Ether on the Ethereum blockchain. The nominal staking annual percentage rate is derived from the summation of a rolling one-day observation window of the staking rate that is then annualized.

$$StakingAPRNominal_t = (365 * (\sum_{i=1}^{24} StakingRate_i))$$

where:

$StakingRate_i$ = A hourly rate that quantifies the annualized yield awarded to eligible validators who staked Ether on the Ethereum blockchain

$\sum_{i=1}^{24} StakingRate_i$ = The summation of staking rate over a rolling one-day observation window

7 Appendix: Nominal Staking APY

Ethereum's nominal staking annual percentage yield is expressed as an annualized rate that quantifies the compounding of awards to eligible validators who staked Ether on the Ethereum blockchain. The nominal staking annual percentage yield is derived from the periodizing and compounding of the nominal staking annual percentage rate.

$$StakingAPYNominal_t = ((1 + \frac{StakingAPRNominal_t}{Number\ of\ Intervals})^{(Number\ of\ Intervals)} - 1)$$

where:

$StakingAPRNominal_t$:= Annualized return for staking Ether

$Number\ of\ Intervals$ = 82,000 intervals, measured by the number of Ethereum epochs in a year

8 Change Log

Release	Date	Changes	Approved
Version 0.1	October 22, 2024	Final Draft CMBI Ethereum Staking Methodology	Oversight Committee
Version 1.0	November 11, 2024	Finalized CMBI Ethereum Staking Methodology	Oversight Committee
Version 1.1	May 20, 2025	Adjustment to Index Calculation Methodology to include compounding due to the Ethereum Pectra Upgrade	Oversight Committee