



CMBI Ethereum Staking Index Methodology

Version 1.0

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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

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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:

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

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)

$StakingRate_t$ = Hourly staking reward earned on Ethereum.

5 Appendix: Reward Rate Calculation

Ethereum’s staking rate is expressed as a periodic rate that quantifies the annualized yield 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 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