Teroxx

State of Ethereum Q2 2025

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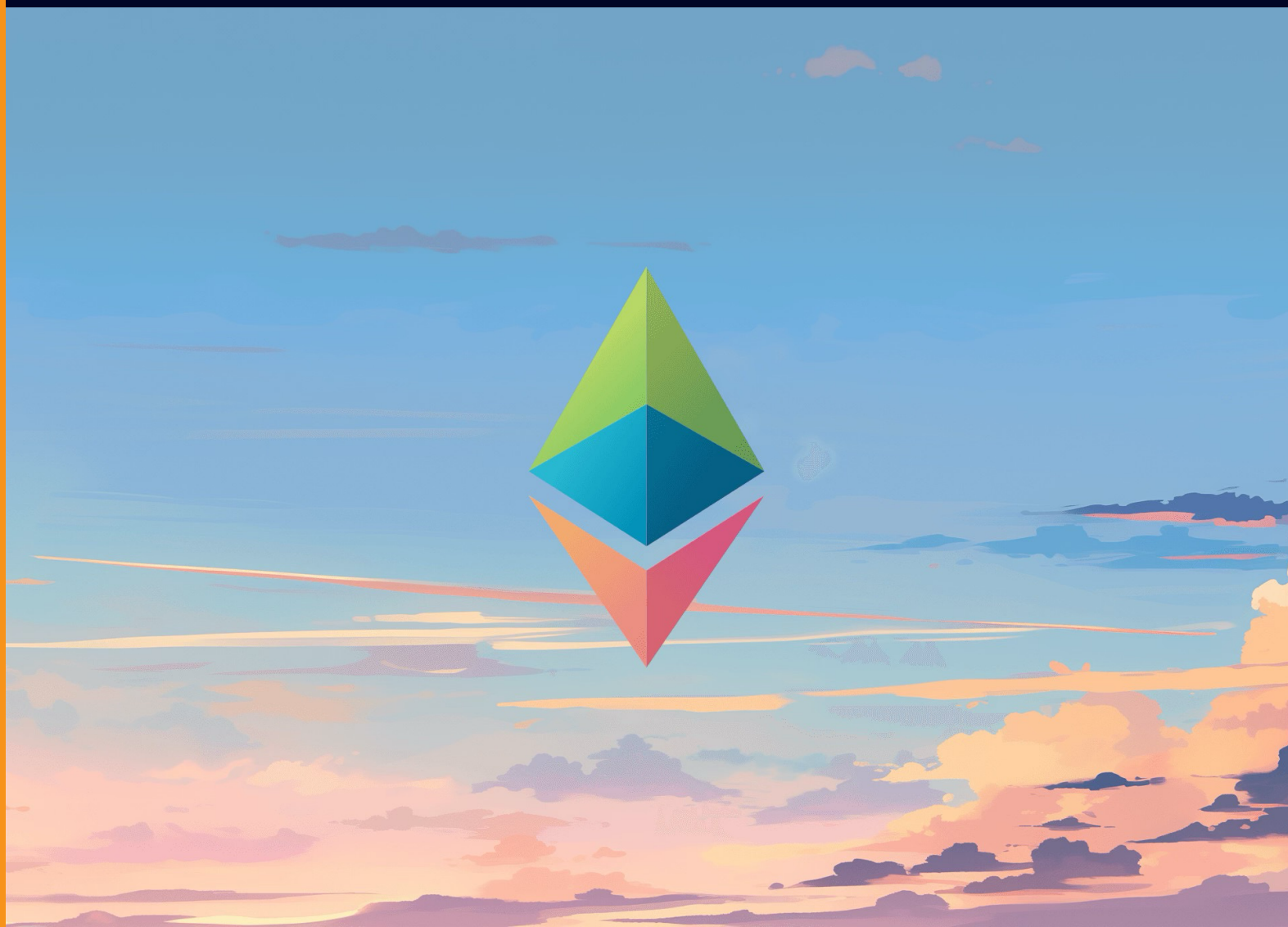
From Speculation to Infrastructure: The Institutional Case for Ethereum



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This report is a product of Teroxx Research, a research team within Teroxx, the leading provider of financial services in the digital assets, cryptocurrency, and blockchain technology sector. Teroxx Research provides top-tier market commentary, thematic views, tactical insights, and deep protocol research.

This report was written in September 2025.

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Executive Summary

Executive Summary

Ethereum's rally from April 2025's correction low of $1,400 to breaching $4,900 in August—a 250% increase in just four months - arguably demonstrated the network's fundamental strength and institutional conviction. This explosive move, recovering from what proved to be a significant bull market correction rather than an existential crisis, coincides with United States's embrace of digital assets and blockchain technology through the GENIUS Act and Circle's landmark IPO, cementing Ethereum's role as the settlement layer for the tokenized dollar era.

The October 2024-March 2025 correction from $4,000 to $1,400, while sharp at 65%, represented a bull market pullback that reset excessive leverage and speculation. April's $1,400 bottom marked maximum pessimism just as the fundamental picture slowly began to improve. Ethereum's position as the dominant stablecoin platform—hosting $153.9 billion with USDT ($75.1 billion) representing 48.8% of tokenized dollars on Ethereum[1] - remained unshaken throughout the correction. The passage of the GENIUS Act transformed regulatory uncertainty into clarity, while Circle's (USDC creator) successful IPO validated the path to a trillion-dollar plus stablecoin market capitalization in the foreseeable future, with some institutional players recognizing that Ethereum's infrastructure may be indispensable to the future of the financial system - which increasingly likely looks set to become an amalgamation of TradFi and Digital Assets - with the majority of value transacted on blockchains.

The institutional capital rotation has been unprecedented in both speed and scale. From April's capitulation lows when weak hands were shaken out, spot Ethereum ETFs captured $3.8 billion in net inflows during August 2025, pushing total AUM beyond $23.3 billion. BlackRock's ETHA absorbed $9.76 billion as institutions aggressively rotated from Grayscale's high-fee products, with daily inflows frequently exceeding $500 million[2]—confirming the correction created an exceptional accumulation opportunity. Corporate treasuries seized the moment, with public companies now holding 3,233,807 ETH ($14 billion), led by SharpLink Gaming's strategic 1,866,974 ETH position acquired during the downturn.

The network's fundamentals remained strong throughout the volatility. Even at April's $1,400 lows, 34.5 million ETH remained staked[3]—demonstrating persistent validator confidence—now worth $150 billion versus $49 billion at the bottom. The perfectly-timed May 2025 Pectra upgrade doubled blob capacity (details on “blobs” later in this report) and introduced smart accounts just as the market turned, while Layer 2 transaction costs of $0.04-0.09 made Ethereum competitive with traditional payment systems just when institutional adoption accelerated.

Sources:

1. DeFi LLama (https://defillama.com/stablecoins/chains) as of September 9th 2025
2. Coinglass - Ethereum ETF Overview (https://www.coinglass.com/eth-etf)
3. Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview

Ethereum's technical infrastructure has matured significantly over the course of the correction period. The rollup ecosystem (Layer 2s) continued building, emerging from the downturn processing 11-12x more transactions than mainnet[4] (as of Q2 2025). Base capitalized on the market reset to capture 58% of L2 transaction volume and $3.4 billion TVL (as of Q2 2025)[5]. The Dencun upgrade, which led to 80-99% cost reductions, proved to be an invaluable investment for the stablecoin boom that followed and drove the recovery.

The DeFi ecosystem's resilience validated Ethereum's structural importance. TVL maintained above $50 billion even at April's lows[6]—remarkable stickiness for a 65% price decline—before surging to over $100 billion with the rally[7]. The GENIUS Act's DeFi provisions arrived at the perfect moment, removing regulatory uncertainty just as institutions recognized the opportunity created by the correction.

Critical challenges remain but appear manageable within the bull market context—validator concentration with Lido at 24.2%[8] continues improving (decreasing), Solana's competition drives healthy innovation, and sustainable fee mechanisms are being refined. The 235%+ rally from April's correction low definitively answered any doubts, with the network hosting ~52% of stablecoin value[9] proving its irreplaceable position.The Federal Reserve's embrace of stablecoins, potential staking-enabled ETFs by year-end, and accelerating corporate adoption confirm April marked a generational buying opportunity rather than structural weakness.

The explosive move from $1,400 to $4,900+ in four months exemplifies how violent bull market corrections create extraordinary opportunities for those who recognize fundamental value. What appeared to be concerning price action in March-April was simply the market's way of resetting before the next major leg higher. With monthly ETF inflows nearing $500 million, Circle's IPO opening doors to expanded stablecoin markets, and the U.S. government incorporating blockchain into strategic infrastructure, Ethereum's recent price movements reflect its role as core infrastructure for tokenized financial systems. The downturn to $1,400 represented a significant market adjustment, while current market dynamics show increasing institutional participation in the Ethereum ecosystem, especially driven by the advent of Ethereum DATs (Digital Asset Treasuries).

Sources:

4. Source: Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview
5. Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview
6. Source: Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview (As of 8th of April 2024)
7. Source: Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview (As of September 9th 2025)
8. Source: Dune Analytics (https://dune.com/queries/2394100/3928083), as of September 9th 2025
9. Source: DefiLlama (https://defillama.com/stablecoins/chains), as of September 9th 2025

Chapter 2

Key Financial & Network Metrics

Ethereum Key Financial & Network Metrics

	Metrics	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	YoY Change %	QoQ Change %
Financial	ETH Price (USD)	$3,435	$2,597	$3,337	$1,824	$2,488	-27.6%	36.4%
	Circulating Supply	119.7 m	120.0 m	120.1 m	120.3 m	120.5 m	0.7%	0.2%
	Circulating Market Cap. (USD)	$ 412.7 bn	$ 312.6 bn	$ 402.0 bn	$ 219.9 bn	$ 300.4 bn	-27.2%	36.6%
	Market Cap Dominance	17.4%	13.0%	11.8%	8.0%	8.7%	-8.7%	9.0%
Network	Avg Daily Active Addresses	411.9 k	360.1 k	400.8 k	399.9 k	414.4 k	0.6%	3.6%
	Avg Daily Transactions	1.175 m	1.123 m	1.218 m	1.226 m	1.331 m	13.3%	8.5%
	Avg Gas Price (Gwei)	4,556	2,497	4,781	1,943	823	-81.9%	-57.7%
	Total Staked (USD)	$ 114.5 bn	$ 90.1 bn	$ 114.3 bn	$ 62.8 bn	$ 88.4 bn	-22.8%	40.7%
	Total Staked (ETH)	33.3 m	34.7 m	34.3 m	34.4 m	35.5 m	6.6%	3.2%
	Share of Staked ETH (%)	27.8%	28.9%	28.5%	28.6%	29.5%	1.6%	3.0%
	L1 TVL (USD)	$ 54.9 bn	$ 48.6 bn	$ 65.7 bn	$ 46.9 bn	$ 62.4 bn	13.5%	33.0%
	L2 TVL (USD)	$ 6.7 bn	$ 7.1 bn	$ 8.3 bn	$ 6.3 bn	$ 7.6 bn	14.1%	20.4%
	Total TVL (USD)	$ 61.6 bn	$ 55.7 bn	$ 74.0 bn	$ 53.2 bn	$ 70.0 bn	13.6%	31.5%
	L2 Market Share (TVL %)	10.8%	12.7%	11.2%	11.9%	10.9%	0.0%	-8.5%
	L1 Transaction Volume	106.9 m	103.3 m	112.1 m	109.0 m	121.1 m	13.3%	11.0%
	L2 Transaction Volume	931.4 m	967.2 m	1262.9 m	1336.3 m	1383.0 m	48.5%	3.5%
	Total Transaction Volume	1038.3 m	1070.5 m	1375.0 m	1445.4 m	1504.1 m	44.9%	4.1%
	Stablecoin Market Cap. (Ethereum)	$ 74.0 bn	$ 88.0 bn	$ 118.3 bn	$ 129.4 bn	$ 129.8 bn	47.5%	0.3%
	Total Crypto Market Cap	**$ 2370 bn**	**$ 2411 bn**	**$ 3394 bn**	**$ 2762 bn**	**$ 3461 bn**	**43.6%**	**25.3%**

Source: Artemis Terminal, Defi Llama, Grow The Pie, Teroxx as September 9th 2025

Chapter 3

Introduction to the Asset

Introduction to the Asset

Ethereum is a distributed blockchain computing platform designed for smart contracts and decentralized applications. Like any digital currency system, its native asset, Ether (ETH), must overcome the "double-spend problem," where a user could potentially spend the same digital coin multiple times. Since digital money is fundamentally data, it could be copied and sent to two different recipients, a problem that doesn't exist with physical cash which can only be in one place at a time. Ethereum was designed to solve this issue without a centralized intermediary like a bank.

The network solves the double-spend problem using its shared blockchain and a consensus mechanism called Proof-of-Stake (PoS). In this system, transactions are broadcast across the network and bundled into a "block" by participants known as "validators". To become a validator, a user must lock up, or "stake," a significant amount of ETH (currently 32 ETH), which acts as collateral to ensure they act honestly. The network protocol selects a validator to propose the next block to be added to the chain. Once the block is proposed, other validators attest to its validity. When a block receives enough attestations and is added to the chain, the transactions within it are considered final and practically irreversible. Any attempt to spend the same Ether again would be rejected by the network, as the public ledger would transparently show the funds have already been transferred, ensuring each unit of Ether can only be spent once.

Ethereum Price USD (2017-Present)

Source: TradingView. Teroxx as September 9th 2025

Chapter 4

Financial Analysis

Ethereum (ETH) has surged past $4,900 in August 2025, completing a remarkable ~250% recovery from April's correction.

Ethereum Price (USD, Past 12 Months)

Source: CoinGecko. Teroxx as September 9th 2025

Ethereum (ETH) has surged past $4,900 in August 2025, completing a remarkable ~250% recovery from April's correction low of $1,400 and achieving a new all-time high of ~$4,950. This explosive rally accelerated through Q2 and into August, driven by unprecedented institutional demand, regulatory clarity from the GENIUS Act, and Circle's successful IPO validating the stablecoin opportunity. The network's market capitalization has expanded to approximately $525 billion[10], reflecting both the dramatic price appreciation and sustained inflows into spot ETH ETFs—including the record-breaking $9.68 billion captured in July's final two weeks alone[11]—that may constitute a sign of institutional conviction in Ethereum's role as critical financial infrastructure.

On-chain activity and network fees have stabilized into a sustainable equilibrium, largely influenced by the Dencun upgrade in March 2024. Total transaction fees for Q2 2025 are stood at $178.4 million[12]. This represents a significant normalization from the pre-Dencun peak in Q1 2024, when fees reached a record $1.33 billion[13] and the active bull phase of Q4 2023, which saw $751.3 million in fees[14]. The Dencun upgrade successfully reduced Layer 2 transaction costs, contributing to a more accessible network, with the average individual transaction fee now around $1.29, down from ~$5.76 a year ago[15].

The network's security, now based on Proof-of-Stake, has grown stronger with these valuations. A record 36 million ETH is now staked, representing about 30% of the circulating supply[16]. With an annualized staking yield of ~3.0–3.2%[17], the network distributes approximately 2,800–3,000 ETH per day in staking rewards. At current prices above $4,350, this translates to a daily security budget of $12–$13 million from new issuance alone.

With daily transaction fees averaging $1.2 million in Q2 2025[18], transaction fees provide a meaningful, secondary layer of security incentives. This strong fee market, combined with a robust staking ecosystem and steady institutional demand, continues to build a strong economic foundation for Ethereum’s long-term security and sustainabilit

Sources:

10. Coinmarketcap, as of September 9th 2025
11. Coinglass - Ethereum ETF Overview (https://www.coinglass.com/eth-etf)
12. Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview
13. Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview
14. Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview
15. Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview
16. Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview (As of September 9th 2025)
17. The ETH Report Q2 2025 by “The DeFi Report”, as of September 9th 2025
18. Artemis Terminal (Artemis Google Sheets Extension), Teroxx Analysis - Ethereum Key Metrics Overview

Chapter 5

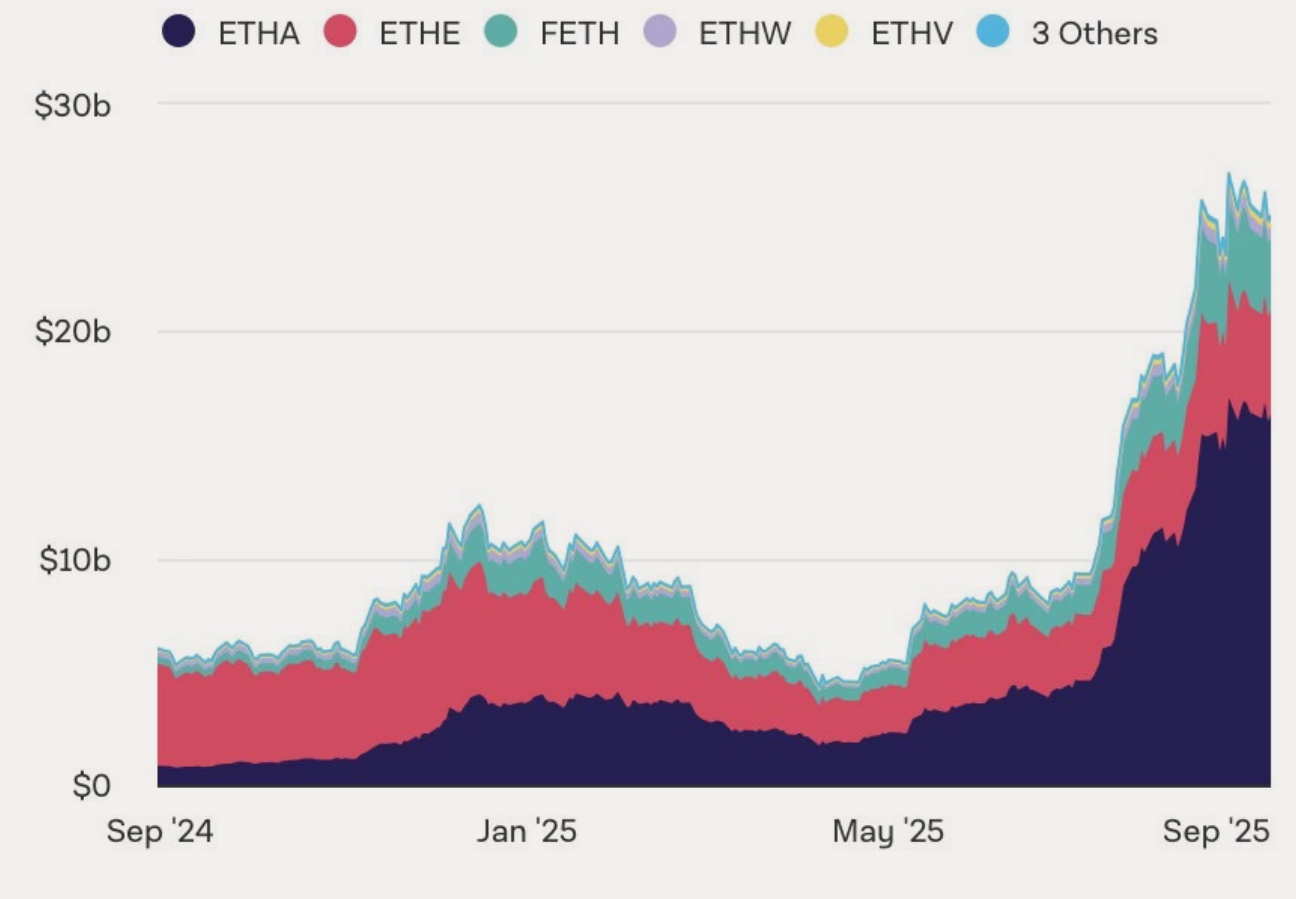
Institutional Adoption

5.1 ETFs

The institutional adoption of Ethereum through ETFs has been a gradual process marked by initial challenges and recent acceleration. As of September 9th, 2025, the total market capitalization of U.S. spot and futures Ethereum ETFs has reached $26.7 billion[19], though this figure represents a journey of uneven growth rather than immediate success.

The U.S. Securities and Exchange Commission (SEC) approved spot Ethereum ETFs on May 23, 2024, with trading commencing on July 2, 2024. While this regulatory milestone created a bridge between traditional finance and digital assets, the initial market response was notably subdued. Unlike the immediate enthusiasm that greeted Bitcoin ETFs, Ethereum ETFs faced months of tepid demand and modest inflows, raising questions about institutional appetite for the asset.

Spot Ethereum ETF AUM (Daily, Past 12 Months)



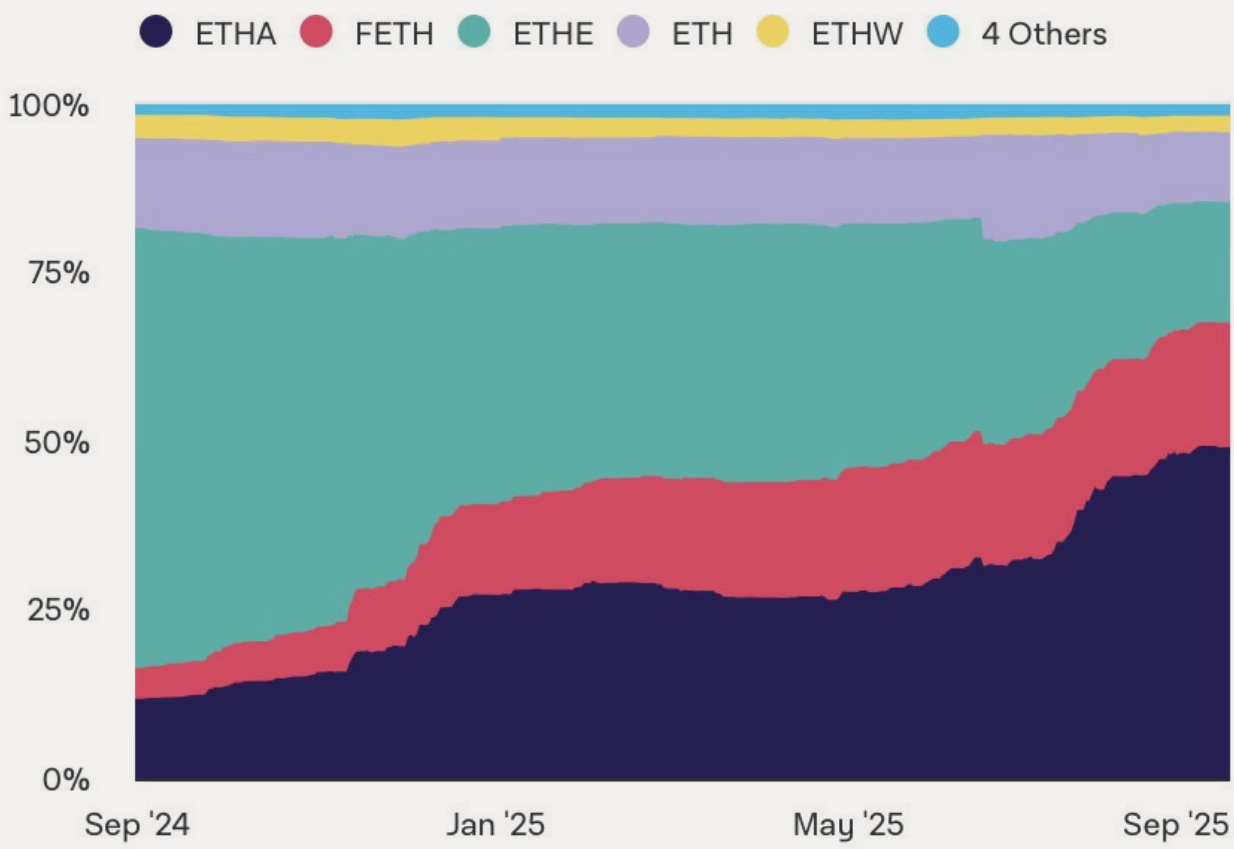
Source: The Block, Teroxx as of September 9th 2025

The narrative shifted dramatically in recent months. By September 9th, 2025—more than a year after launch—these ETFs finally gained meaningful traction, recording a combined 24-hour trading volume of approximately $2.7 billion. This surge represents a stark contrast to the products' lackluster debut. BlackRock's iShares Ethereum Trust (ETHA) now leads with $15.95 billion in assets, while Grayscale's converted Ethereum Trust (ETHE) holds $3.46 billion and Fidelity's Ethereum Fund (FETH) manages $1.34 billion[20]—figures that would have seemed unlikely during the products' sluggish early months.

This recent momentum has expanded the investor base, though the connection between traditional finance and DeFi remains constrained. The ETFs require issuers to hold actual Ether, creating underlying demand, but regulatory limitations persist: approved ETFs cannot offer staking features due to concerns about unregistered securities offerings. While issuers including BlackRock have pending applications with the SEC to add staking capabilities, with decisions expected by year-end 2025, this absence of yield generation may have contributed to the products' initially weak performance.

The current AUM of the US ETH Spot ETFs stands at ~$23 billion (as of September 9th 2025).

Spot Ethereum ETFs On-Chain Holdings (Market Share %, Past 12 Months)



Source: The Block, Teroxx as of September 9th 2025

Beyond price, these ETFs also hold significant potential to boost the Ethereum ecosystem by increasing DeFi liquidity, enhancing network security through staking, and attracting more developers, fostering greater innovation.

Top 5 Ethereum ETFs (US)

Ticker	Issuer	Inception Date	AUM (USD Billions)	Expense Ratio (%)
ETHA	iShares (BlackRock)	Jun 24, 2024	$ 15.9	0.25
ETHE	Grayscale Trust	Jul 23 2024	$ 3.4	2.5
ETH	Grayscale Mini Trust	Jan 23, 2024	$ 1.3	0.15
FETH	Fidelity	Jul 22 2024	$ 1.3	0.25
ETHW	Bitwise	Jul 23, 2024	$ 0.5	0.20

Source: Coinglass, Teroxx as of September 9th 2025

The competitive landscape for U.S. Spot Ethereum ETFs, though newer than their Bitcoin counterparts, is rapidly taking shape with key players establishing early dominance. Following their trading commencement in late July 2024, Grayscale Ethereum Trust (ETHE), similar to its Bitcoin counterpart, initially held the largest AUM due to its conversion from a trust, although it has experienced some outflows. However, new entrants like BlackRock's iShares Ethereum Trust (ETHA) and Fidelity Ethereum Fund (FETH) have quickly begun to amass significant assets. As of late-August 2025, ETHE maintains a substantial presence with AUM estimated around $3.4 billion, while BlackRock's ETHA has rapidly climbed close to $16 billion, and Fidelity's FETH is also a strong contender with AUM in the $1.3 billion range. Their performance in these initial months reflects a growing appetite for direct Ether exposure via regulated channels.

Sources:

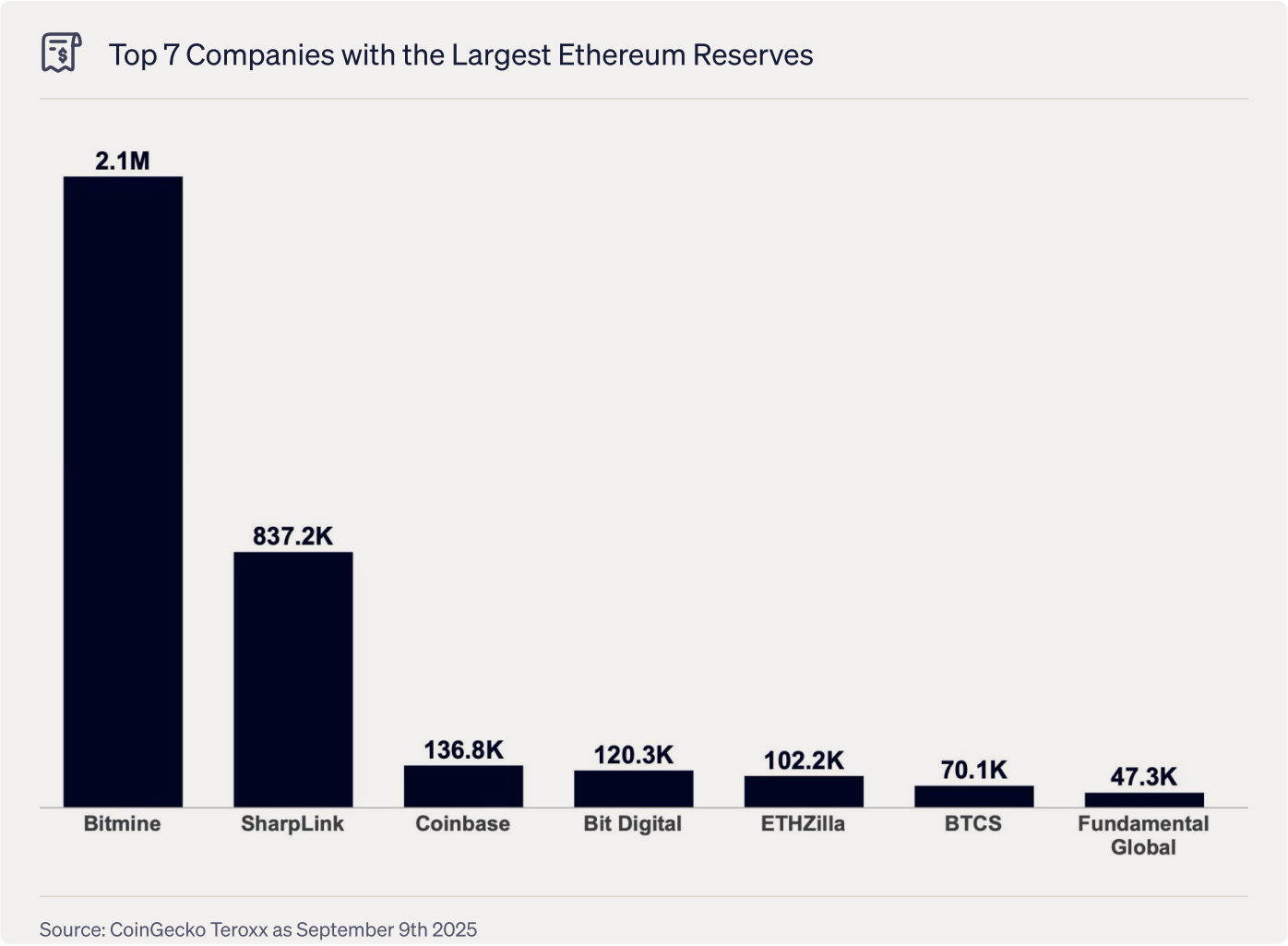
19. Coinglass Ethereum ETFs (https://www.coinglass.com/eth-etf)
20. Coinglass Ethereum ETFs (https://www.coinglass.com/eth-etf)
21. Arkham Intelligence (https://intel.arkm.com/explorer/entity/bitmine)
22. Bitmine Investor Relations / Press Relase (https://www.bitminetech.io/investor-relations#press-releases)
23. Official Company Data (Pubic Reports and Press Releases)

5.2 Ethereum Digital Asset Treasuries (DATs)

In a significant shift on the Digital Asset Treasuries (DATs) front, Ethereum (ETH) is rapidly gaining prominence alongside Bitcoin as a key store-of-value asset for public companies. This trend highlights a growing acknowledgment of Ethereum's value beyond its foundational role in decentralized applications, positioning it as a potential strategic reserve asset that can be held for the long-term.

Leading this charge is Bitmine Immersion Technologies (NYSE: BMNR), which has emerged as the world's #1 Ethereum treasury holder with over 2,069,443 (valued at more than $9 billion as of September 2025)[21]. The company has executed an aggressive acquisition strategy, aiming to eventually control 5% of all ETH supply. This ambitious goal is backed by prominent institutional investors including ARK's Cathie Wood, Founders Fund, Pantera, Kraken, and Galaxy Digital. BMNR has become one of the most liquid US stocks, with average daily trading volume of $6.4 billion, currently ranked 10th among all listed US companies - on top of becoming the #1 ETH treasury in the world, and 2nd largest digital asset treasury globally[22]. This trend of public companies holding Ethereum now accounts for over 2.9 million ETH, representing ~$13.7 billion in value (with ETH at $4,700)

Other notable public companies with significant Ethereum holdings include[23] the ones presented in the chart below:



Source: CoinGecko Teroxx as September 9th 2025

Chapter 6

Network Analysis

Ethereum Network Analysis

Metrics	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	YoY Change %	QoQ Change %
CORE NETWORK STATS							
Daily Active Addresses	411.9 k	360.1 k	400.8 k	399.9 k	414.4 k	15.1%	3.6%
Total Active Addresses	37.5 m	33.1 m	36.9 m	36.0 m	37.7 m	13.8%	4.8%
Daily Transactions	1.175 m	1.123 m	1.218 m	1.226 m	1.331 m	18.5%	2.0%
Total Transactions	106.9 m	103.3 m	112.1 m	110.4 m	121.1 m	17.2%	2.0%
ECONOMIC & NETWORK METRICS							
Avg Daily Transaction Fee	$5.76	$3.51	$5.99	$2.63	$1.29	-63.2%	-50.8%
Daily Fees Per User	$28.82	$11.52	$16.32	$28.37	$3.40	-70.5%	-88.0%
Daily Total Network Fees	$ 6.8 m	$ 3.9 m	$ 7.3 m	$ 3.2 m	$ 1.7 m	-56.4%	2.0%
Total Transaction Fees	$ 616.2 m	$ 363.1 m	$ 671.5 m	$ 290.1 m	$ 156.7 m	-56.9%	2.0%
STAKING							
Total Staked (USD)	$ 114.5 bn	$ 90.1 bn	$ 114.3 bn	$ 62.8 bn	$ 88.4 bn	-1.9%	40.7%
Total Staked (ETH)	33.3 m	34.7 m	34.3 m	34.4 m	35.5 m	2.4%	3.2%
Share of Staked ETH (%)	27.8%	28.9%	28.5%	28.6%	29.5%	1.6%	-27.3%
NETWORK HEALTH RATIOS							
Transactions per Address	2.85	3.12	3.04	3.07	3.21	2.9%	4.7%
Total Crypto Market Cap	**$ 2370 bn**	**$ 2411 bn**	**$ 3394 bn**	**$ 2762 bn**	**$ 3461 bn**	**43.6%**	**25.3%**

Source: Artemis Terminal, Teroxx as September 9th 2025

In September 2022, Ethereum executed a landmark event in blockchain history known as "The Merge". This upgrade transitioned the network's consensus mechanism from the energy-intensive Proof-of-Work (PoW) model to a more sustainable Proof-of-Stake (PoS) framework. Previously under PoW, so-called "miners" used vast amounts of computational power to validate transactions. The move to PoS shifted this responsibility to "validators," who instead lock up, or "stake," ETH as collateral to secure the network, verify transactions, and propose new blocks. This change has not only reduced Ethereum's energy consumption by over 99%, but also redefined its economic principles, laying a new foundation for the network and its token.

In Sep 2022, Ethereum executed a landmark event known as ”The Merge”- moving from Proof-of-Work to Proof-of Stake.

6.1. Staking and Validator Dynamics

The security and health of the Ethereum network under PoS are directly tied to the amount of ETH staked and the active participation of validators. In the second quarter of 2025, the network showed continued strength in this area.

The total amount of staked ETH grew by 3.2%, reaching 35.5 million[24]. This represents an all-time high of 29.5%[25] of the total circulating supply being actively used to secure the network. The growth in staked assets was driven by increased participation from entities like e.g. Binance and the liquid staking protocol EtherFi[26]. This increasing stake size fortifies the network, making it prohibitively expensive for any single entity to mount an attack.

In Q2 2025, the Total Onchain Yield for stakers was 3.22%. A significant 88% of this yield came from issuance rewards (new ETH). Real Onchain Yield, which consists only of Priority Fees and MEV, stood at 0.39% (APY)[27]. This highlights the network's current reliance on issuance to incentivize participation, a common characteristic in the early stages of PoS networks. As onchain activity and transaction fees grow, the reliance on issuance is expected to decrease.

Education Corner

The rewards for securing the network, which incentivize validators and stakers, are composed of three main elements:

1. Priority Fees: Tips paid by users to have their transactions processed more quickly.
2. Maximal Extractable Value (MEV): Value extracted by validators from reordering or inserting transactions within a block.
3. Issuance: New ETH created by the protocol as a baseline reward for staking.

Sources:

24. Artemis Terminal, Teroxx
25. Artemis Terminal, Teroxx
26. Defi Llama (https://defillama.com/chain/Ethereum)
27. The ETH Report Q2 2025 by “The DeFi Report”, as of 30.06.2025

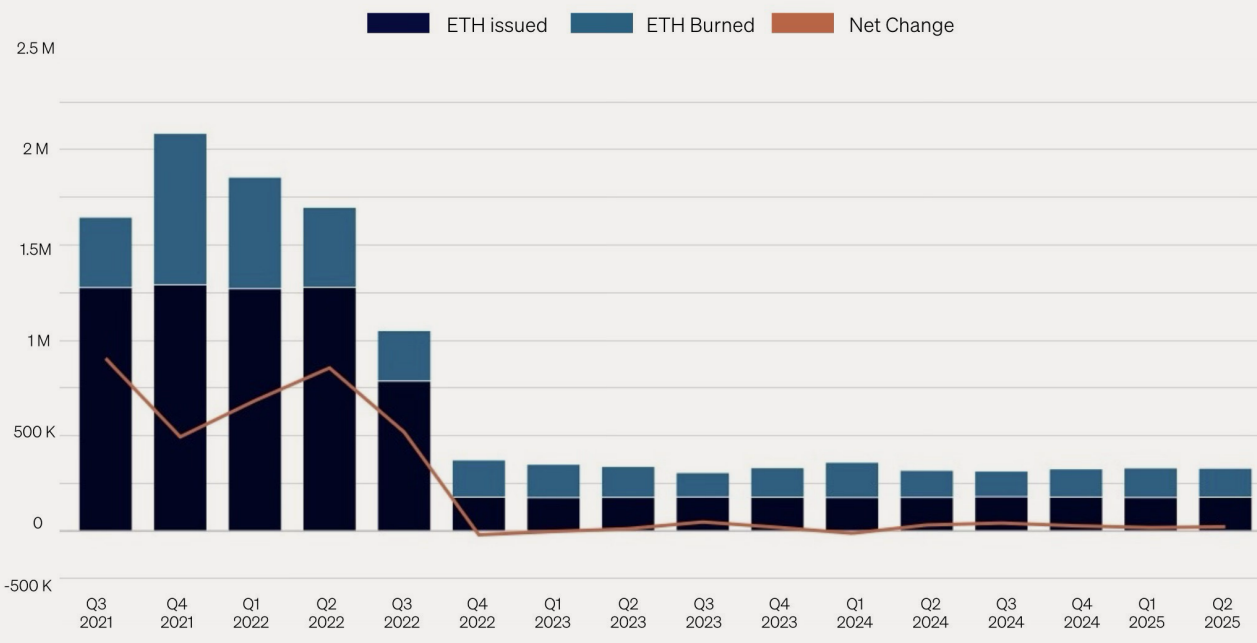
6.2. Is ETH Inflationary or Deflationary?

Ethereum's supply toggles between being modestly inflationary and modestly deflationary depending on the relationship dynamics between validator issuance and fee burning, with Q2 2025 landing on the inflationary side as issuance materially exceeded burn amid a steep drop in base fees (see the Quarter on Quarter drop in 'Avg Daily Transaction Fee' as well as 'Daily Total Network Fees' in the Network Statistics table above). Over multi-quarter spans since EIP-1559 (Ethereum's London Hard Fork, activated in August 2021) and the Merge, periods of elevated usage and higher base fees have pushed ETH into net deflation, whereas stretches of lower L1 demand—especially after L2 cost reductions—have produced slight net inflation, keeping total supply near the 120.7M range as of August 2025[28].

In Q2 2025, ETH was inflationary: issuance of 170,500 ETH exceeded 152,000 ETH burned[29], translating into a positive net dilution (inflation) for the quarter. The primary driver was a pronounced decline in base fees, with reports noting a steep quarter-over-quarter drop as L2 adoption and fee-reducing upgrades compressed L1 demand, shrinking the burn and tilting the balance back toward inflation despite only a modest increase in issuance (0.9% Q/Q). While lower fees are a net positive for user experience and throughput, they mechanically reduce ETH burned on L1, and until L2 settlement volumes or L1 activity re-accelerate enough to reignite burns, the supply dynamic can remain slightly inflationary on a quarterly basis even with PoS's comparatively low issuance.

The accompanying chart plots quarterly issuance and burn as stacked bars since EIP-1559,[30] overlays the net supply change.

Ethereum Quarterly Issuance vs. Burn (2021-2025)



Source: The Block, Teroxx as of September 9th 2025

6.3. The Restaking Economy

A new trend of restaking has emerged within the Ethereum ecosystem. Pioneered by the EigenLayer protocol, restaking allows ETH that is already staked (either directly or via liquid staking tokens) to be "reused" to secure other applications and protocols, known as Actively Validated Services (AVSs). These can include data availability layers, decentralized oracles, bridges, and more.

Instead of building their own costly and fragmented security systems, new protocols can tap into Ethereum's robust validator set and economic security through EigenLayer. In return for taking on additional validation responsibilities (and additional "slashing" risks, where a portion of their stake can be confiscated for misbehavior), restakers earn extra rewards from the protocols they help secure.

This creates a marketplace for decentralized trust, enhancing capital efficiency for stakers and providing a secure foundation for innovation across the ecosystem. The growth of this sector has been significant. In Q2 2025, the Total Value Locked (TVL) in EigenLayer grew by 40.0% (from $ 8.7bn to $12.2bn), slightly outpacing the increase in ETH price in the same period of 36.4%[31], indicating a market interest.

6.4. Decentralization

The long-term health and value proposition of Ethereum depends critically on its decentralization and censorship resistance. A decentralized network avoids single points of failure and control, ensuring that no single entity can dictate who can transact or what applications can run.

A key metric for decentralization is the distribution of validators and the software clients they use. A healthy network should have a diverse set of participants, both in terms of who is running the validators and what software they are running

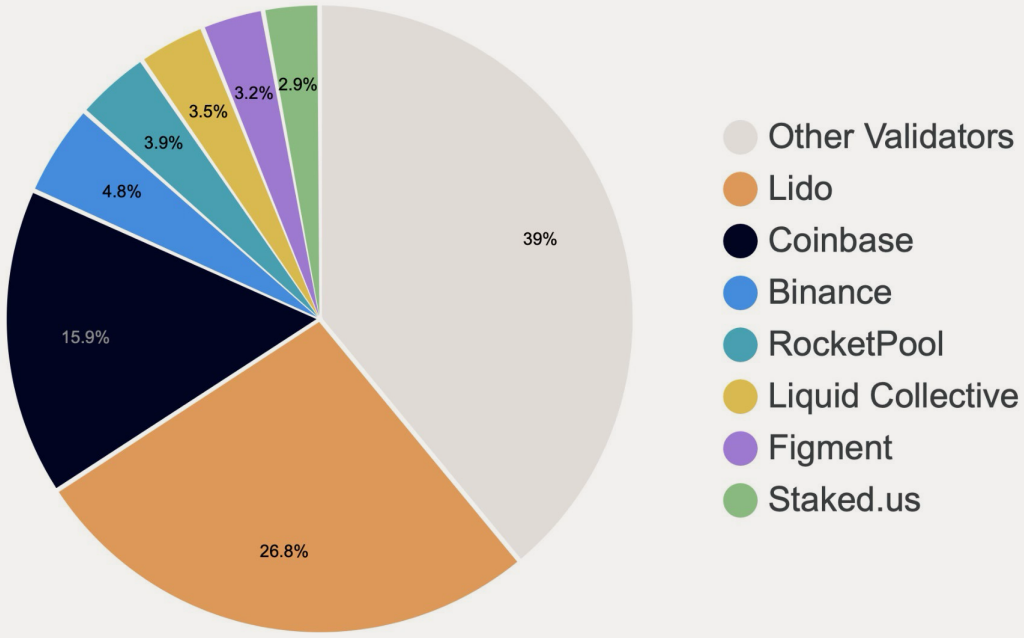
Sources:

30. EIP-1559 is an Ethereum upgrade, launched on August 5, 2021, that made transaction fees more predictable by automatically setting a base price and burning that fee to gradually reduce ETH supply.

31. Artemis Terminal

Staking Distribution: While staking is growing, there is a notable concentration among a few large entities. As of Q2 2025, Lido, a liquid staking protocol, held a significant, though declining, market share (~26.8%). Exchanges like Binance (~4.8%) and Coinbase (15.9%) also control a large number of validators[32]. This concentration poses a risk, as issues with a single major provider could impact a large portion of the network's stake.

Ethereum Staking Distribution (as of September 2025)



Source: Dune Analytics, Teroxx as of September 9th 2025

Client Diversity: Client diversity refers to the variety of software implementations used by validators. If a single client has a dominant market share (a "supermajority"), a bug in that client could potentially halt the chain or cause it to split. While efforts are being made to diversify, the Geth client has historically been dominant. Recent data indicates some improvement, but achieving a state where no single client has more than a 33% share remains a key goal for the community[33].

Sources:

32. Dune Analytics (https://dune.com/queries/2394100/3928083), as of September 9th 2025

33. The Ethereum Foundation (https://ethereum.org/en/developers/docs/nodes-and-clients/client-diversity/), Cryptoslate (https://cryptoslate.com/ethereum-validators-reliance-on-geth-sparks-client-diversity-push-by-coinbase/)

Chapter 7

The Emergence of the Layer 2 Ecosystem

The Ethereum Layer 2 ecosystem has reached a definitive inflection point in Q2 2025, with Base emerging as the undisputed market leader while EIP-4844's proto-danksharding[34] has delivered transformational scaling improvements. The $10.6 billion in combined L2 TVL[35] represents a mature, consolidated market where protocols specialize in their distinct niches, rather than competing directly across all use cases. Remarkably, L2s now process 11-12x more transactions than Ethereum mainnet (as of Q2 2025)[36] while maintaining security guarantees, fundamentally altering how developers and users interact with the Ethereum ecosystem.

The data reveals that Ethereum's Layer 2 strategy has succeeded beyond initial projections, with sustained 85-90% cost reductions post-Dencun upgrade[37] and clear market leaders establishing defensible moats. Base's ~58% share of L2 transaction volume and its $3.4 billion TVL leadership in DeFi[38] demonstrate that Ethereum Layer 2 solutions can achieve broad adoption, deliver sustained real economic activity, and consistently provide low-cost, high-throughput infrastructure.

The May 2025 Pectra upgrade has accelerated these trends by doubling blob capacity and introducing smart account functionality, creating the technical foundation for the next phase of L2 evolution while reducing blob costs from $16,000 daily to fractions of a penny[39].

Education Corner

What are "blobs" actually? Before diving into the numbers, let's “decode” blobs – because despite the silly name, they're the unsung heroes of Ethereum's scaling story. Think of blobs as Ethereum's new "budget storage lockers."

Traditionally, when Layer 2 networks like Base or Optimism needed to store their transaction data on Ethereum (for security), they had to rent expensive "premium real estate" directly on the main blockchain – imagine paying NYC’s Manhattan prices for every piece of data. Blobs introduced a revolutionary alternative: temporary, lower-cost storage spaces that Layer 2s can rent for about 18 days before the data automatically expires (like a self-destructing message, but for blockchain data).

The genius is in the economics. Instead of paying premium prices to store data forever on Ethereum's main chain, rollups can now use these "blob spaces" at a fraction of the cost – often 80-99% cheaper. It's like switching from buying expensive downtown office space to renting a co-working space that perfectly meets your needs. The technical name "blob" stands for "Binary Large Object," but you can think of them simply as "cheap, temporary data containers that made Layer 2s incredibly affordable."

7.1. Post-Dencun Analysis (March 2024): The Sustained Impact of EIP-4844

Ethereum's recent Dencun upgrade, specifically EIP-4844 (also known as "Proto-Danksharding"), has been a big success, proving that the technical choices made for its future scaling plans are solid.

The March 13, 2024 Dencun upgrade has fundamentally transformed L2 economics through Q2 2025, delivering sustained cost reductions of 80-99% across major rollups while establishing the technical foundation for Ethereum's multi-rollup future. Base saw transaction costs drop from $0.495 to $0.019 (96% reduction)[40], while Optimism achieved even more dramatic savings from $0.384 to $0.008 (98% reduction)[41]. Most significantly, these reductions have been sustained through Q2 2025 without the fee volatility that many predicted would emerge as adoption scaled.

User migration patterns reflect this improved economic foundation. The prediction that 70% of Ethereum L1 TVL will migrate to L2s within 5 years post-EIP-4844 appears conservative given current adoption trajectories. Base alone processes more daily transactions than Ethereum mainnet, while Arbitrum maintains ~300,000 daily active users as of the June 2025 data[42].

EIP-4844's biggest long-term achievement is laying the groundwork for full danksharding. Key features like the new Type-3 transaction format (a new way to structure transactions), multi-dimensional gas pricing (a more nuanced way to charge for transaction fees), and preparations for data availability sampling (a method to efficiently check if data is available) have all been successfully tested in the real world. This significantly reduces the risks for future upgrades.

Based on how well EIP-4844 is performing, reaching the goal of over 100,000 transactions per second (TPS) with full danksharding seems increasingly realistic. The market for blob fees has also shown it can effectively manage pricing and network congestion, and the systems designed to prove the validity of transactions have handled current volumes without any slowdowns.

Developers and operators are now much more confident in Ethereum's long-term roadmap, leading to more investment in Layer 2 (L2) solutions like rollups and the applications built on them. The past ~18 months (since Dencun upgrade in March 2024) of reliable and low-cost operations have squashed any doubts about Ethereum's strategy of scaling through rollups, allowing for long-term planning around developing applications specifically for L2s.

Sources:

34. Note: EIP-4844, known as proto-danksharding, was a major Ethereum network upgrade, launched in March 2024 as part of the Dencun update, that allowed the blockchain to store large bundles of transaction data cheaply and temporarily, making Ethereum much faster and more affordable for everyone.
35. Artemis Terminal, as of September 9th 2025
36. Artemis Terminal (In Q2 2025, Ethereum processed 121.2m transactions vs. 1,383.0m of L2 transactions. L2s processed 11.4x more.)
37. Artemis Terminal (Calculated on the basis of Total Fees paid, compared Q1 2024 Fees to Q2 2025 Fees, given the Dencun upgrade took place in March 2024. Q2 2025 Total Fees / Q1 2024 Total Fees = 12.4%.)

7.2. Pectra Upgrade (May 2025)

The Pectra upgrade, which went live on May 7, 2025, was Ethereum's most significant update to date. It successfully bundled 11 different Ethereum Improvement Proposals (EIPs)—think of them as specific feature updates—into one massive overhaul.

The upgrade transformed Ethereum in three major ways:

1. User Experience: Introducing "Smart Accounts" to make crypto wallets dramatically easier to use.
   a. DApps and other services can now pay the transaction fee (gas) for you - you can interact with a protocol without needing ETH in your wallet.
   b. One can now approve a token swap and stake the new token all in a single transaction, saving time, clicks, and fees.
   c. This paves the way for setting up trusted friends or other devices to help you regain access to your wallet if you lose your keys.
2. L2 Scalability: Doubling data capacity to make Layer 2 transactions cheaper than ever.
   a. It doubled the amount of blob space available in each Ethereum block. More supply immediately led to lower prices.
   b. The upgrade also intentionally made the old calldata method more expensive, creating a strong economic incentive for all L2s to switch to the much more efficient blob system.
   c. The cost for L2s to post data to Ethereum plummeted from thousands of dollars per day to fractions of a penny. This made data storage for L2s "virtually free," and those savings have been passed on to users in the form of much lower transaction fees.
3. Staking Efficiency: Streamlining how validators operate on the network.
   a. Consolidated Staking (EIP-7251): The maximum stake per validator was raised from 32 ETH to 2,048 ETH. This allows large operators to merge up to 64 validators into one, simplifying their operations. For solo stakers, it means you can compound your staking rewards directly into your existing validator instead of needing to spin up a new one once you earn another 32 ETH.
   b. Faster Deposits & Withdrawals: The waiting time to get a new validator online was cut from about 12 hours to just 13 minutes.
   c. Better Security: New mechanisms allow for more secure staking pool designs and reduce reliance on "hot keys" (online keys that are more vulnerable to hacks).

Sources:

38. Artemis Terminal, data for Q2 2025 (transaction volume) and 30.06.2025 (TVL)
39. CoinMetrics (https://coinmetrics.substack.com/p/state-of-the-network-issue-313),
40. Artemis Terminal, comparing Q1 2024 Fees vs Q2 2025 Fees
41. Artemis Terminal, comparing Q1 2024 Fees vs Q2 2025 Fees
42. Artemis Terminal, as of September 9th 2025

7.3. Strategic Implications of L2s Emergence

The Q2 2025 data reveals five critical insights for understanding Ethereum's scaling trajectory:

1. First, EIP-4844 has definitively solved the cost problem for L2 scaling while establishing a technically sound foundation for future improvements. The sustained 80-99% cost reductions and stable blob pricing mechanisms eliminate previous concerns about Ethereum's ability to scale economically.
2. Second, the Pectra upgrade has accelerated the scaling timeline by doubling blob capacity and introducing smart account functionality that makes Ethereum competitive with Web2 user experiences. The immediate 33%[43] increase in blob usage and near-zero costs demonstrate the upgrade's transformational impact.
3. Third, market consolidation around specialized platforms represents a more mature competitive landscape than the previous "winner-take-all" assumptions. Base's user growth leadership, Arbitrum's DeFi dominance, and the Superchain's network effects suggest successful L2s will focus on vertical excellence rather than horizontal competition.
4. Fourth, ZK-rollup technology has reached practical maturity with instant finality and enhanced security properties creating distinct advantages for specific use cases. While optimistic rollups maintain adoption leadership, ZK solutions are establishing defensible positions in institutional applications and high-performance scenarios.
5. Fifth, interoperability infrastructure has become a primary competitive differentiator rather than a peripheral concern. Success in the multi-L2 future will depend on seamless user experiences and unified liquidity rather than raw performance metrics or isolated ecosystem growth.

The Ethereum Layer 2 ecosystem in Q2 2025 represents the successful realization of the rollup-centric roadmap while revealing that Pectra's smart accounts and doubled blob capacity have fundamentally accelerated the timeline toward mainstream adoption.

The next phase of competition will focus on ecosystem specialization, user experience optimization, and sustainable business model execution built upon the solid technical foundation established by EIP-4844 and enhanced by Pectra's breakthrough capabilities.

Sources:

43. Artemis Terminal temporarily, making Ethereum much faster and more affordable for everyone.

Chapter 8

Future Roadmap

8.1 The Next Phase: From MEV to Statelessness

Following Pectra's success, Ethereum's roadmap through 2027 takes a more gradual approach, with multiple focused upgrades rather than monolithic changes. The immediate priority for late 2025 is MEV infrastructure improvements, followed by the multi-year journey toward statelessness and full danksharding.

2025-2026: Fusaka Hard Fork

The next major Ethereum upgrade, called Fusaka and expected in Q4 2025, will make it much fairer for everyone who helps run the network. Right now, some smart or powerful validators can earn extra profits by reordering transactions, which leads to too much centralization. With this upgrade, Ethereum will build a new rule—called Proposer-Builder Separation (PBS)—directly into its system. This means all validators, whether big or small, will have an equal shot at earning MEV rewards, making the network more secure and balanced for everyone.

This upgrade will also introduce "inclusion lists" to prevent transaction censorship and potentially implement MEV smoothing to distribute rewards more evenly. Some proposals include partial MEV burn, which could return Ethereum to deflation despite lower L1 fees. This represents a critical step in maintaining decentralization as institutional staking grows.

Education Corner

Maximal Extractable Value (MEV) refers to the extra profit that blockchain insiders (such as validators) can earn by reordering, including, or excluding transactions in a block, often allowing them to take advantage of users—similar to cutting the line or front-running trades for personal gain[44].

Proposer-Builder Separation (PBS) is a new system in Ethereum that splits the job of creating blocks: builders assemble blocks with the most valuable transactions, and proposers select which block gets added to the chain, making the whole process fairer and less prone to abuse or manipulation by any single party[45].

Sources:

44. CoinTracker, Binance Academy, DroomDroom, Teroxx

45. Nervos, Binance, Ethereum Foundation, Teroxx

2026-2027: The Statelessness Transformation

Statelessness represents Ethereum's most ambitious technical evolution, fundamentally changing how the network operates. Currently, validators must store over 100GB of blockchain data that grows continuously. Statelessness would eliminate this requirement, allowing validators to verify transactions using tiny cryptographic proofs instead.

The transformation will occur in phases:

- Phase 1 (2026): State expiry activation, automatically archiving data unused for 2+ years
- Phase 2 (2026-2027): Verkle tree migration, reducing proof sizes by 10-100x
- Phase 3 (2027): Full “weak” statelessness, enabling validation on consumer hardware

This democratizes network participation—imagine running a validator on a laptop or even a high-end smartphone. For institutions, it dramatically reduces infrastructure costs while improving geographic distribution.

2027-2028: Full Danksharding: Scaling to Global Capacity

Building on proto-danksharding's success, full danksharding will expand blob capacity from 6 to potentially 256 per block. More importantly, it introduces data availability sampling (DAS), allowing nodes to verify data without downloading it all—like confirming a library has a book without reading every page.

Timeline targets:

- Late 2026: DAS testnet launch
- 2027: Initial mainnet features with 32-64 blobs
- 2028: Full deployment with 256 blobs, enabling 100,000+ TPS across L2s

This positions Ethereum's Layer 2 ecosystem to collectively exceed Visa's transaction capacity while maintaining decentralization.

The Path Ahead

Ethereum's roadmap from late 2025 through 2028 systematically removes barriers to global adoption. The immediate MEV improvements maintain decentralization as institutional staking grows. Statelessness democratizes validation, making it accessible to anyone with basic hardware. Full danksharding delivers virtually unlimited scale. User experience improvements make blockchain invisible to billions of potential users.

By 2028, Ethereum aims to be unrecognizable from today—processing millions of transactions per second across Layer 2s, secured by validators running on consumer devices, with user experiences matching traditional applications. The journey from experimental blockchain to invisible global infrastructure continues, with each upgrade bringing that vision closer to reality.

Closing Summary

Closing Summary

The second quarter of 2025 marks a significant next step in Ethereum's evolution from experimental blockchain to foundational financial infrastructure. The network's dramatic recovery from April's $1,400 correction low to breaching $4,900 in August—a ~250% surge in four months—represents far more than a price rally. It signals the convergence of technological maturity, regulatory clarity, and institutional adoption that positions Ethereum at the center of the changing global financial system that is increasingly based on blockchain infrastructure.

The numbers tell a compelling story of achieved scale. With ~$104.4 billion in DeFi TVL[46], $148.5 billion in stablecoins[47], and 36.0 million ETH staked[48], Ethereum has become too economically significant to ignore. The network processes more value daily than many traditional financial systems, with Layer 2s handling 11-12x mainnet's transaction volume, while maintaining the same security guarantees. The successful implementation of Dencun and Pectra upgrades has delivered on the promise of scalable, affordable blockchain infrastructure, with transaction costs on leading L2s now competitive with traditional payment networks at $0.01-0.04[49].

Institutional adoption has reached escape velocity. A net total of $9.4 billion in ETF inflows over July and August[50]—following months of steady accumulation—demonstrates that allocation decisions have shifted from "whether" to "how much." BlackRock's ETHA dominance, Circle's successful IPO, and the GENIUS Act's regulatory clarity have created a perfect storm of institutional accessibility. Corporate treasuries holding 2,900,000 ETH+ recognize what the market is confirming: Ethereum has become essential infrastructure for the tokenized economy.

The stablecoin narrative deserves special emphasis. Ethereum's dominance in hosting $148.5 billion in stablecoins of on-chain dollars—52% of the global total—positions it as the leading settlement layer for the digital dollar. The U.S. government's recognition that stablecoin supremacy equals dollar supremacy, crystallized through the GENIUS Act, transforms Ethereum from a speculative asset to strategic infrastructure. Circle's IPO success validates trillion-dollar market potential, and with every USDC transaction burning ETH it’s creating sustainable value accrual.

Yet challenges remain that demand attention. Validator concentration through Lido at 26.8%[51], though declining, requires continued vigilance. The rollup-centric roadmap has definitively succeeded, but in ways more nuanced than originally envisioned. Rather than winner-take-all dynamics, the L2 ecosystem has evolved into specialized platforms: Base for user onboarding with its 58% transaction volume share, Arbitrum for sophisticated DeFi with $3.9 billion in protocols, the Optimism Superchain for network effects with 30+ chains. This specialization creates a more resilient, diverse ecosystem that serves different user needs while maintaining Ethereum's security guarantees.

Sources:

46. Artemis Terminal, as of September 9th 2025
47. DefiLlama, as of September 9th 2025 (https://defillama.com/stablecoins/Ethereum)
48. Dune Analytics, as of September 9th (https://dune.com/hildobby/eth2-staking)
49. Artemis Terminal, average cost per transaction of Layer 2s in Q2 2025
50. Coinglass

Looking ahead, the roadmap detailed in Section 8 provides clear visibility into Ethereum's evolution through 2028. The immediate MEV/PBS upgrade in Q4 2025 will address centralization concerns as institutional staking grows. The journey toward statelessness (2026-2027) will democratize validation, while full danksharding promises virtually unlimited scale. Combined with potential staking-enabled ETFs by year-end and major banks developing stablecoin initiatives, the technical and institutional pieces are aligning for the next phase of growth.

The implications are profound. Ethereum has positioned itself as the primary settlement layer for tokenized assets and programmable money, processing more value daily than many traditional systems while offering 24/7 operation and transparent execution. What appeared vulnerable at April's $1,400 lows has proven essential at August's $4,900+, confirming that institutional adoption is driving fundamental revaluation rather than speculation.

As 2025 progresses, Ethereum's position appears increasingly secure. The technical infrastructure is proven—rollups have delivered scalability at competitive costs. The institutional framework is established—ETFs provide regulated access while the GENIUS Act offers clarity. The economic model is functioning—stablecoin growth drives network usage and value accrual. With the network having reached its new $4,900+ all-time high on fundamentally stronger foundations than 2021, the market is pricing in Ethereum's transition from experimental technology to critical financial infrastructure.

The 250% rally from April to August likely marks the beginning of Ethereum's institutional phase rather than its conclusion. Monthly ETF inflows at $4-5bn[52], coupled with the clear technical roadmap toward global scale, suggest the market recognizes what this report confirms: Ethereum has arguably successfully positioned itself as the foundational layer for the trillion dollar tokenized economy.

Sources:

51. Dune Analytics (https://dune.com/queries/2394100/3928083)

52. Artemis Terminal, data for July and August 2025

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