

# HashKey Cloud Annual Report

2024

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# Introduction

HashKey Cloud, a premier Web3 infrastructure service provider specializing in node validation services, offers institutional-grade security and stability to the evolving blockchain ecosystem. Boasting a strong market reputation and cutting-edge technical capabilities, we have managed \$3.8B in assets under node validation services, establishing ourselves as a leading player in this space. Committed to innovation, security, and client satisfaction, HashKey Cloud is a trusted partner for both institutional and individual investors.

In 2024, HashKey Cloud achieved several notable milestones:

- **Outstanding APR Performance**

We achieved an annual percentage rate (APR) of 3.5%, surpassing the Ethereum network's average of 3.33%, reflecting our advanced validator management strategies and robust infrastructure.

- **Market Leadership in Node Validation**

Our assets under node validation reached \$3.8B, solidifying our position among the top global node validation service providers.

- **Security Excellence**

Our asset security score of 98.21% demonstrated our unwavering commitment to a "safety first" approach,

ensuring the highest standards of security for our clients.

This report covers the dynamic landscape of the node validation and restaking\* markets in 2024, a year marked by significant growth, technological advancements, and macroeconomic influences. Since we cover not only the LRT protocols on Ethereum but also Solana and Bitcoin, it is necessary to standardize the units in USD for consistency. The total node validation market cap surged to approximately \$2.78T, driven by the emergence of innovative protocols like EigenLayer and Babylon. The year was also marked by a number of significant macroeconomic events including, but not limited to, central bank interest rate decisions and political developments like the U.S. presidential election, which impacted market sentiment and investor behavior. This report is structured to provide a comprehensive overview of the node validation and restaking market in 2024, with a focus on HashKey Cloud's achievements and the broader industry trends. The report is organized into the following sections:

- **Financial Performance**

A detailed review of HashKey Cloud's financial metrics and market position.

- **Market Dynamics**

An analysis of the overall node validation market,

\*Restaking is a node validation infrastructure service.

including key players, growth drivers, and emerging trends.

- **Technological Innovations**

Insights into the latest advancements in node validation protocols, including restaking, EigenLayer, and Babylon.

- **Risk and Challenges**

An examination of the regulatory, security, and market risks facing the node validation industry.

Looking ahead, HashKey Cloud remains committed to driving innovation and maintaining our leadership in the node validation market. We will continue to expand our support for multiple blockchain networks, enhance our security protocols, and explore new opportunities in the rapidly evolving Web3 ecosystem. As we enter 2025, we are optimistic about the potential for continued growth and look forward to delivering even greater value to our clients and partners.

This report serves as a testament to our achievements in 2024 and a roadmap for our future endeavors. We invite you to explore the insights and data within, and we look forward to continuing our journey of innovation and excellence in the years to come.



**2024**

**HashKey Cloud**

**Business Summary**

# Achievements on APR

In this dynamic node validation landscape, our company has distinguished itself as a premier Web3 infrastructure service provider. In 2024, we achieved an impressive annual percentage rate (APR) of 3.5%, surpassing the Ethereum network's average node validation yield of 3.33%. This outstanding performance is a testament to our advanced validator management strategies and robust infrastructure, which together enable us to deliver superior returns to our clients. Our commitment to maximizing client rewards while maintaining an institutional grade of security and stability is at the core of our success, positioning us as a trusted partner in the rapidly evolving Web3 ecosystem.



## Gross Rewards Rate

ETH Network's Average

**3.33%**

HashKey Cloud

**3.50%**

# Scale and Market Position in Node Validation

Through our reliable technical services and strong market reputation, the assets under node validation service provided by us achieved a value of \$3.8B. This positions us among the leading node validation service providers worldwide.

**HASKEY**  
▶CLOUD

**Total Assets**

**\$3.8B**

## Asset Security: A Commitment to Excellence

We prioritize asset security through reliable node operations. In 2024, our validator performance scored 98.21% (versus the network average of 97.93%), demonstrating our validators' consistent performance in maintaining network stability and transaction integrity - key factors in protecting user assets.



## Effectiveness Rating

ETH Network's Average

**97.93%**

HashKey Cloud

**98.21%**

# Expansion Across Multiple Networks

Positioned as a leading node validation service provider, our company proudly supports over 80 major public blockchains, including Ethereum, Solana, Sui, TON, Aptos, Cosmos, and BNB Chain. In 2024, we've added support for over 35 networks and protocols as follows.



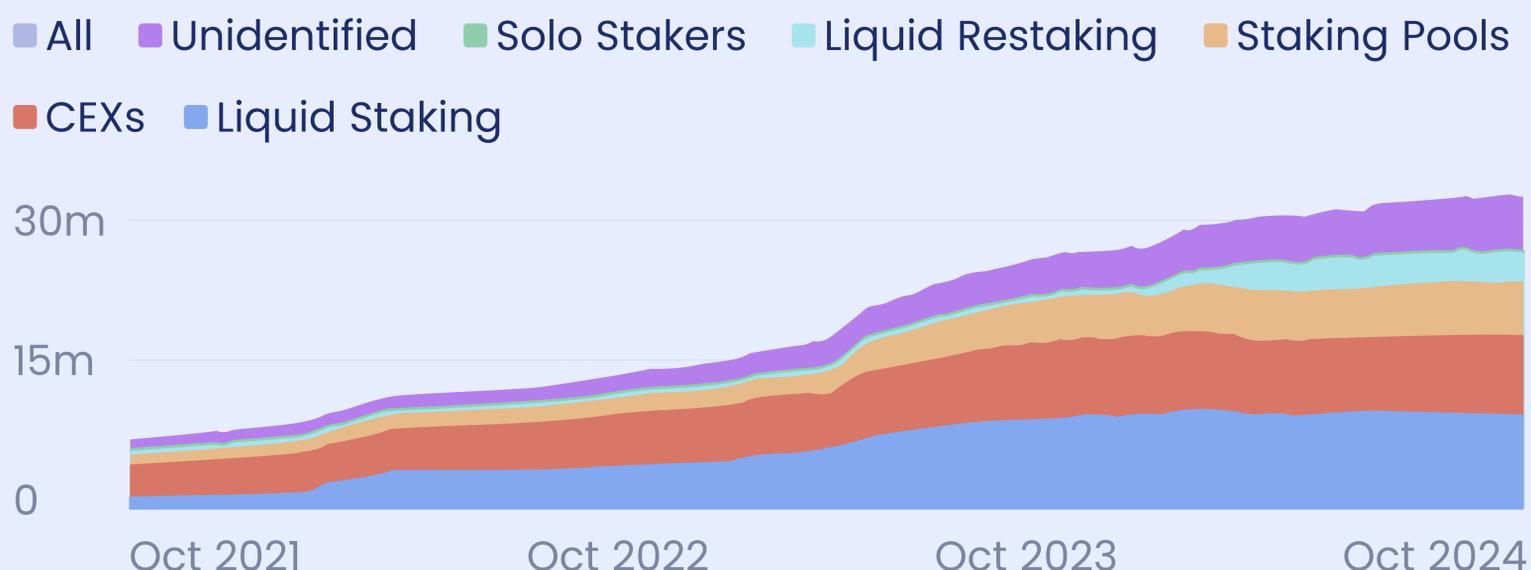
Through our strategic expansion across multiple blockchain networks, we have built a robust node validation infrastructure that covers the majority of the Proof of Stake (PoS) blockchain ecosystem.

# 2024 Node Validation Market

# Overall Node Validation Market Dynamics

Given data from stakingrewards.com, as of 2024, the total proof of stake (PoS) market has exhibited remarkable expansion, with the overall market cap surging by 637% over the past year to approximately \$2.78T, with the node validation market cap surging by 183% and reached \$395.48B. Among the leading PoS networks, Ethereum continues to hold a dominant position. The overall node validation market cap of Ethereum has shown a 75.3% increase in a risk-free environment and optimistic market expectations for ETH's future price. Approximately 28.9% of ETH supply (34M ETH), is currently under node validation.

## Amount of Staked ETH Since 2021



Source: Dune Analytics (@hildobby)

In addition to Ethereum, the rest of the PoS networks have shown exceptional growth and strong node validation participation, for example: Solana has emerged as one of the fastest-growing networks, with its soaring by 337.36% to reach \$111B. The network maintains a ratio of 65.67% to participate in node validation, with \$387.16M SOL currently under staked. Sui has shown remarkable market performance with an impressive 480.12% increase in token market cap, reaching \$11.09B. The network boasts one of the highest node validation ratios at 78.39%, with \$7.84B SUI tokens staked.

## Top 5 PoS Chains

Node Validation Market Cap & Ratios 2024

Chain	Node Validation Market Cap(B)	Node Validation Ratio
Ethereum	<b>\$124.53</b>	<b>28.13%</b>
Solana	<b>\$85.34</b>	<b>65.78%</b>
Sui	<b>\$28.74</b>	<b>78.31%</b>
Cardano	<b>\$22.06</b>	<b>60.31%</b>
BNB Chain	<b>\$20.08</b>	<b>20.19%</b>

Source: [stakingrewards.com](https://stakingrewards.com)

Node Validation is a mechanism that allows cryptocurrency holders to lock up their tokens to maintain network security. This process not only enhances the security and stability of the blockchain but also provides participants with an opportunity to generate passive income.

In the meantime, the emergence of restaking protocols and on-chain ecosystems also benefit the crypto market's rapid growth. By reinvesting node validation rewards, these protocols offer a mechanism similar to compound interest, allowing investors to grow their holdings exponentially.

EigenLayer emerged as a dominant force in the restaking landscape, capturing a 72.23% market share by the end of 2024. Its TVL surged by 1386%, reaching a staggering \$19.96B, while its overall market cap climbed to \$869.28M. EigenLayer's success is rooted in its ability to provide enhanced security and rewards, making it a preferred choice for many stakeholders. To further enhance its ecosystem, EigenLayer introduced a one-year token incentive program in October 2024, distributing 66,945,866 EIGEN tokens, or 4% of the total supply. This strategic initiative boosted liquidity and collaboration, encouraging broader participation and capital inflows.

Babylon, a revolutionary protocol, enabled Bitcoin holders to engage in staking without surrendering control

over their assets. By locking their BTC in a self-custody staking contract, users contributed to the security of PoS chains while earning rewards. Launched on October 8, 2024, Babylon rapidly gained popularity, attracting over 20,000 deposit addresses and securing more than 23,000 BTC. Babylon's entry into the staking arena catalyzed the growth of LST within the Bitcoin ecosystem, with protocols like Bedrock, PumpBTC, Lorenzo, Solv, and Lombard collectively controlling nearly 85% of Babylon's staking pool.

## Restaking Ecosystem

### Restaking Protocols



### Actively Validated Services



### Operators



### Liquid Restaking Protocols



### Restaking-related Products & Services



### Collateral Assets



While EigenLayer and Babylon led the market, other protocols like Symbiotic and Karak made significant strides. Symbiotic achieved a TVL of \$2.624B by the end of 2024, showcasing its growing influence. Its multi-asset support enhanced economic security and provided developers with the freedom to tailor their security strategies. Karak, with a TVL of \$937.89M, distinguished itself through broad asset support and cross-chain node validation capabilities, fostering greater interoperability and integration.

Liquid Restaking Token (LRT) protocols experienced more than 70x growth, with their TVL surging from \$285.85M on January 1 to \$22.58B by the end of 2024. ETH LRTs accounted for the majority of the market share, while BTC LRTs also saw significant growth. LRT protocols offered multiple yield sources, including node validation yields, restaking yields, and airdrop yields, attracting a large number of stakers.

These restaking protocols' innovations and strategic initiatives not only drove market growth but also provided investors with diverse options, indicating significant potential for the restaking sector in the coming years.

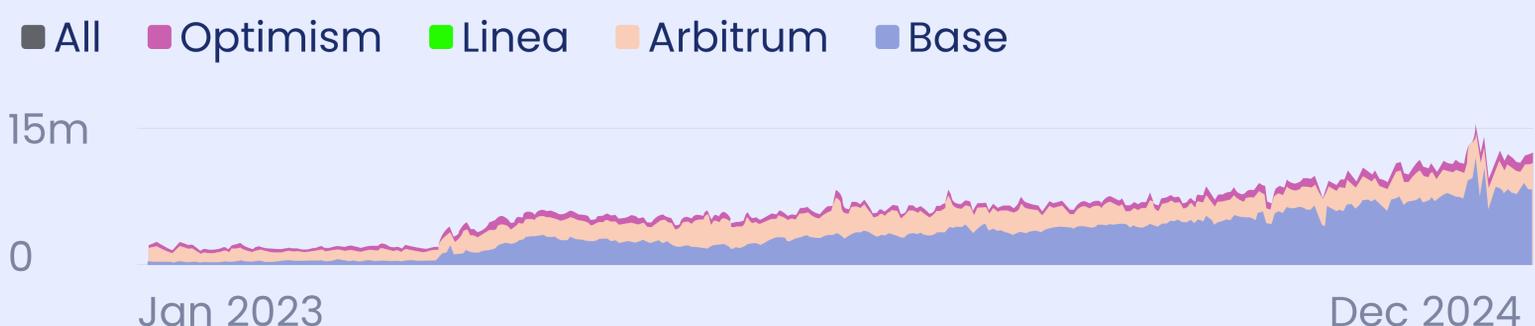
# Ethereum Dencun Upgrade

As the node validation market continues to mature, the Ethereum network is also advancing through significant upgrades. The Dencun upgrade represents a pivotal step in enhancing Ethereum's scalability and efficiency, with potential implications for node validation. Building on insights into the evolving node validation market, this section examines how the Dencun upgrade further shapes the network's performance and scalability, thereby influencing the broader ecosystem.

The Dencun upgrade, which is executed on 13. March, is a major update for Ethereum, with the main goals of enhancing the network's scalability, reducing transaction costs, and improving overall performance. The upgrade introduces several key proposals, the most talked about of which is EIP-4844, Proto-Danksharding.

## 2024 Transactions Count

By Network: Base, Optimism, Arbitrum, Linea



Source: Dune Analytics (@ashkey)

## To ETH Fundamentals

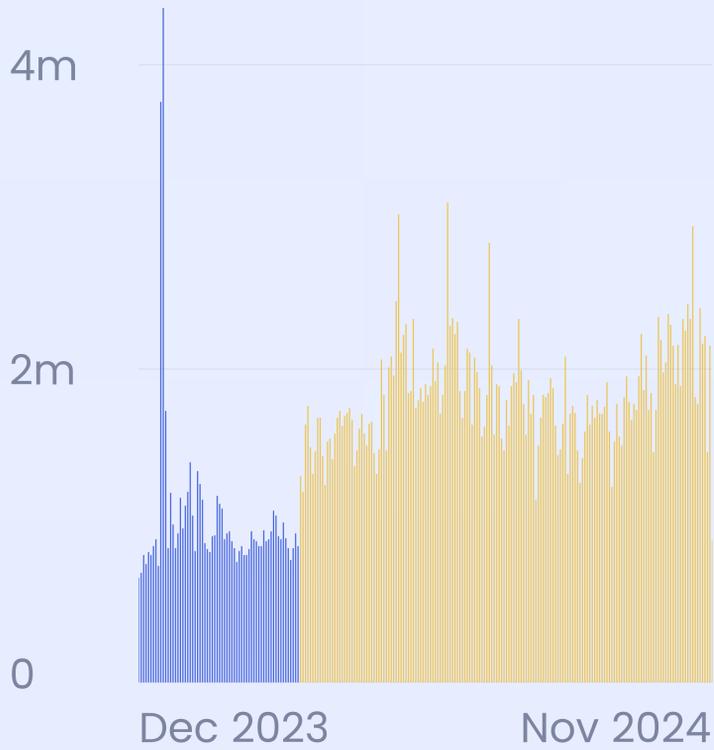
The Dencun upgrade marks a significant milestone in the evolution of Ethereum, presenting both advantages and challenges that have profound implications for the fundamentals of ETH.

One of the key benefits of the Dencun upgrade is to accelerate Ethereum's rollup-centric roadmap. Through the introduction of enhancements like EIP-4844, the upgrade optimizes data storage and reduces gas fees for Layer-2 transactions, especially those utilizing blob instead of calldata. This transformation enhances scalability and efficiency, making rollup solutions more appealing to developers and users. Consequently, Ethereum's strategy to scale through Layer-2 solutions is significantly strengthened, aligning with its broader vision of sustainable growth and usability.

## Transactions Before/After Dencun

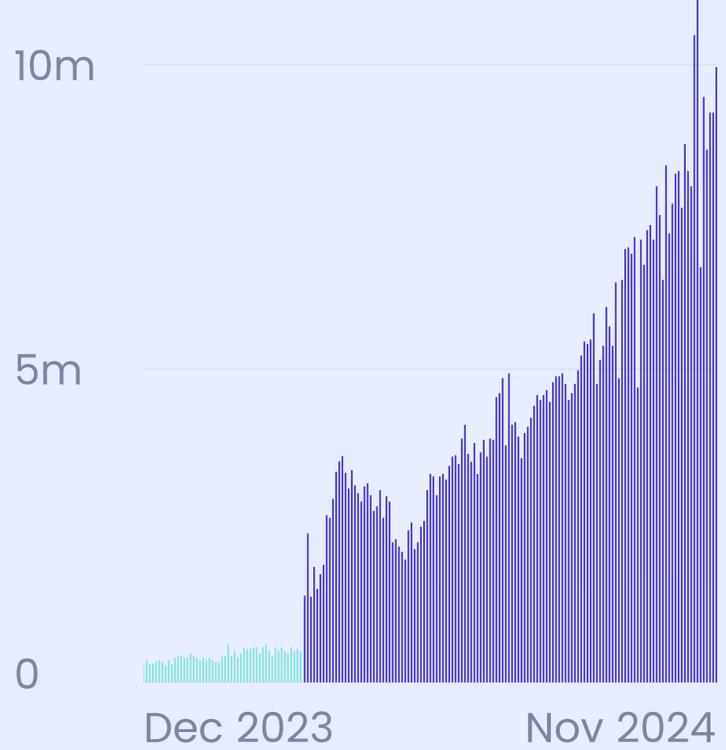
### Arbitrum TXs Before/After Dencun

■ Before ■ After



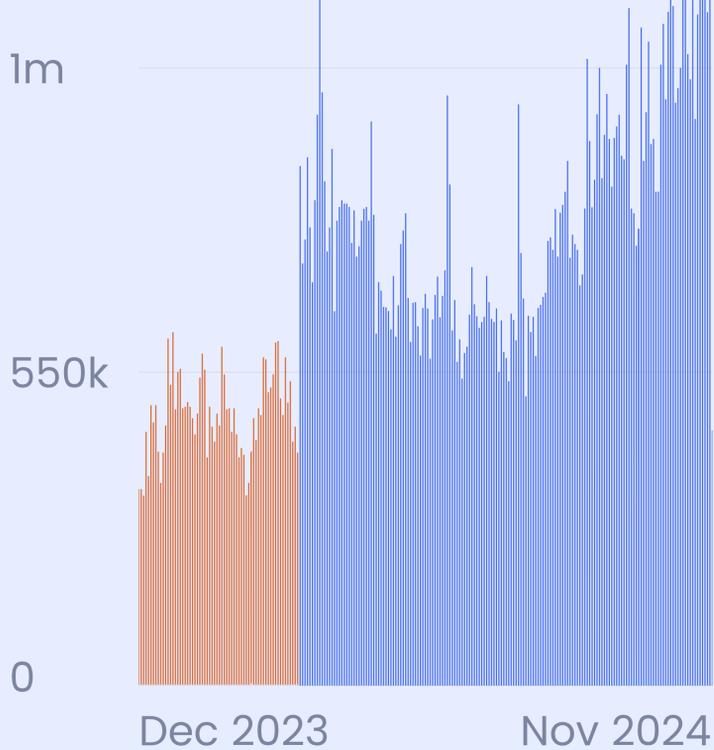
### Basw TXs Before/After Dencun

■ Before ■ After



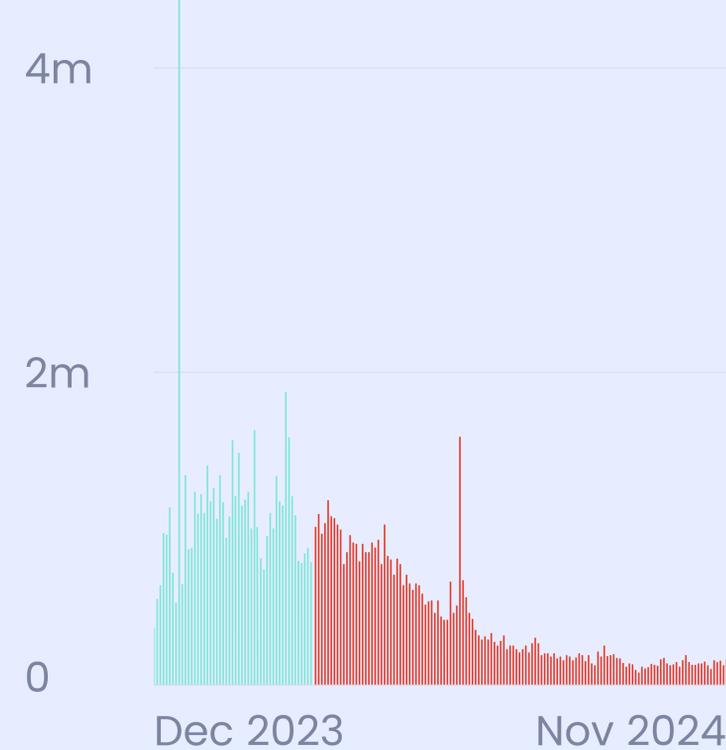
### Optimism TXs Before/After Dencun

■ Before ■ After



### zkSync TXs Before/After Dencun

■ Before ■ After



Source: Dune Analytics (@obchakevich)

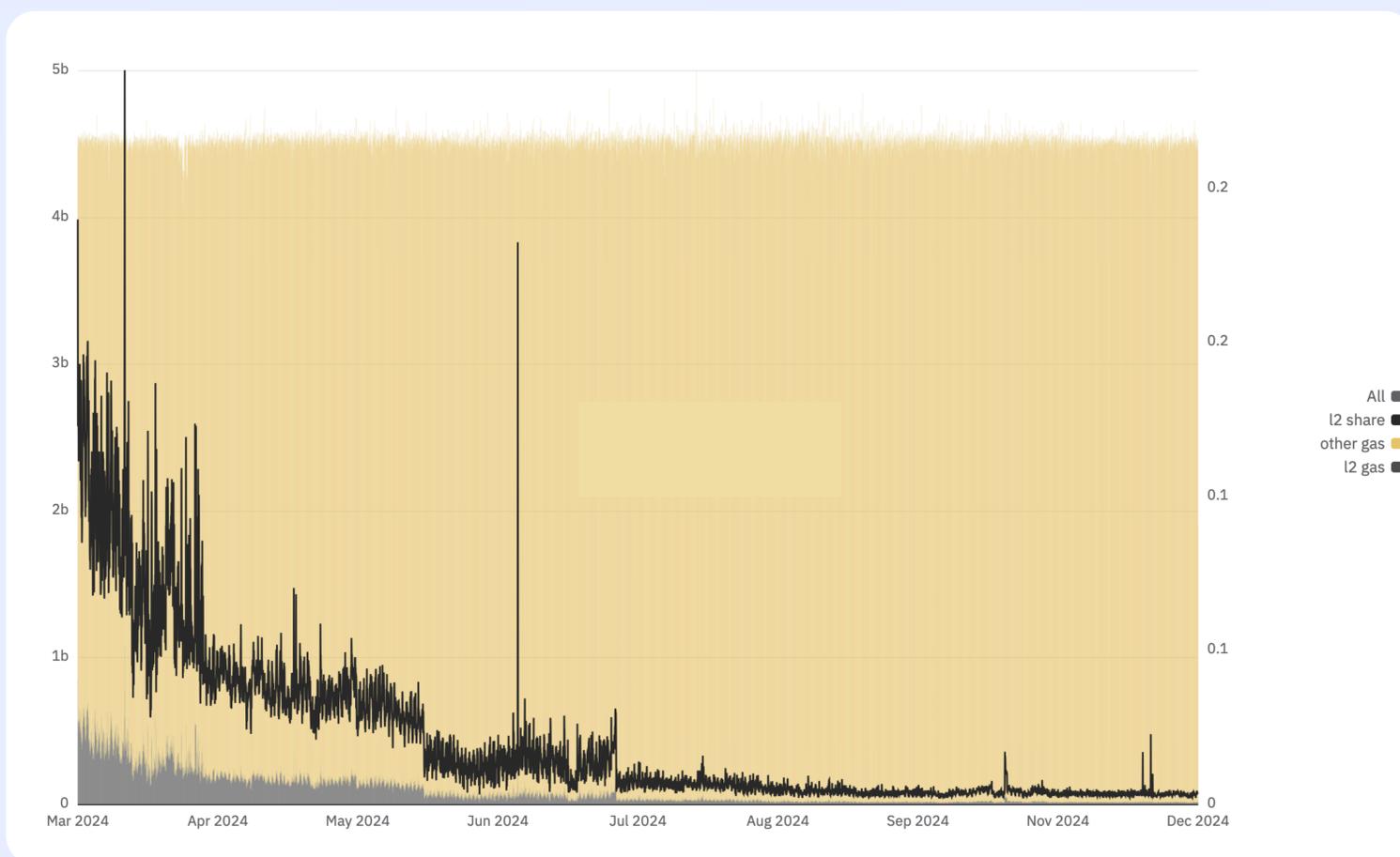
A notable consequence of the Dencun upgrade is the potential impact on ETH's ultra sound money narrative. The reduction in gas fees has led to a decline in the burn rate of ETH, which alters its deflationary characteristics. This change could affect ETH's attractiveness as a store of value, particularly among investors who prioritize its scarcity and deflationary properties. The shift in supply dynamics brings new considerations for investors and the broader market.

On the other hand, in addition to the direct effects of the Dencun upgrade, other factors will also influence ETH's fundamentals. Market sentiment, including fear, uncertainty, and doubt (FUD), plays a significant role in asset valuation. Moreover, competition from L1s like Solana, especially during its memecoin super cycle, and protocols like TON with its tap-to-earn model, can pose challenges as well as opportunities for ETH. These projects don't necessarily exert only negative pressure on ETH's market position but rather introduce a competitive landscape that forces ETH to adapt and evolve. These external influences interact with the effects of the upgrade, adding to the complexity of assessing ETH's fundamentals and new considerations for investors and the broader market.

The two figures below demonstrate the impact of the Dencun upgrade (EIP-4844) on Ethereum's Layer 2 networks. After the upgrade, L2 gas fees initially dropped significantly and then stabilized, as shown in the first

chart. The introduction of Proto-Danksharding reduced the cost of data availability for rollups, enabling lower fees. The second chart highlights this effect across major L2 networks (Arbitrum, Optimism, Base, zkSync), where gas fees consistently decreased, improving scalability and usability.

## L2 gas share

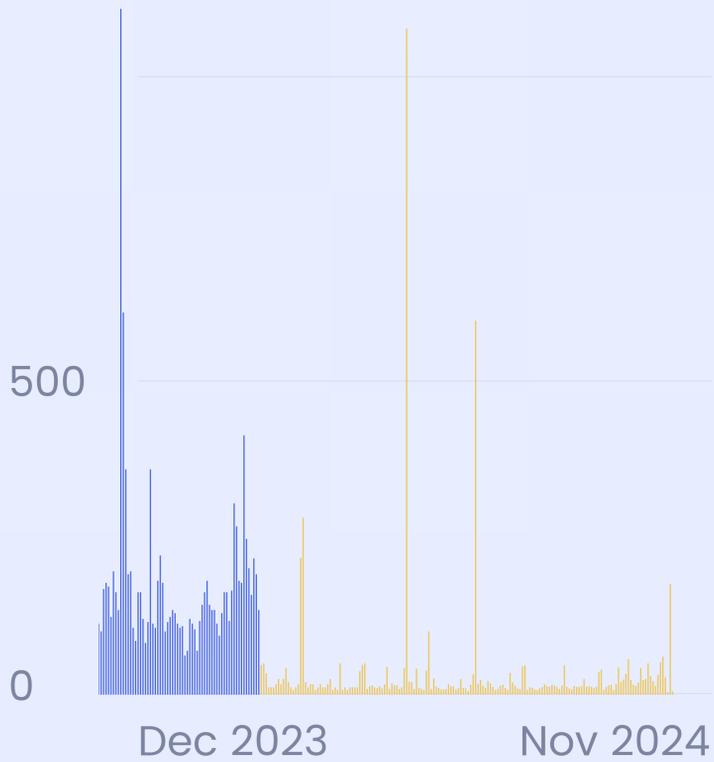


Source: Dune Analytics (@obchakevich)

## Fees Paid Before/After Dencun

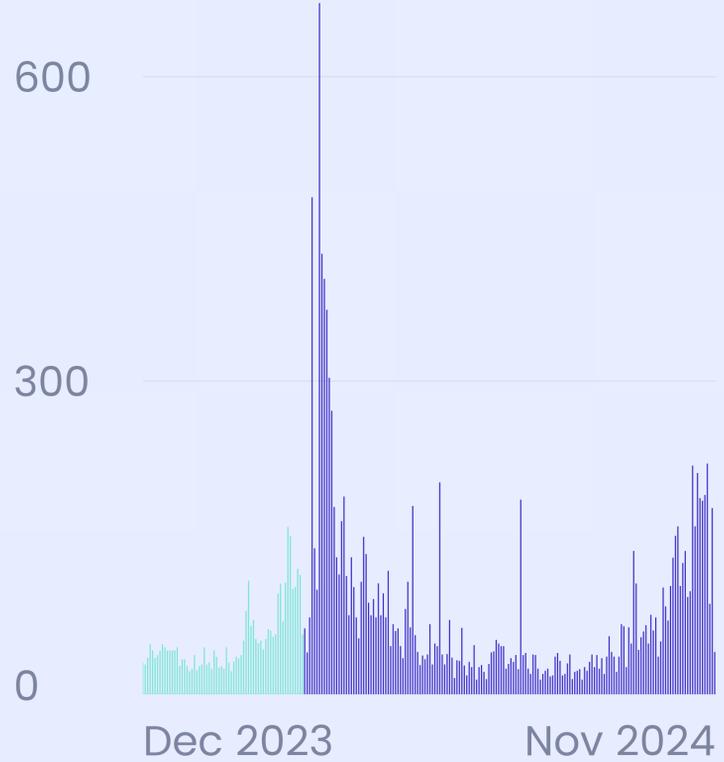
Arbitrum Fees Paid Before /AfterDencun ETH

■ Before ■ After



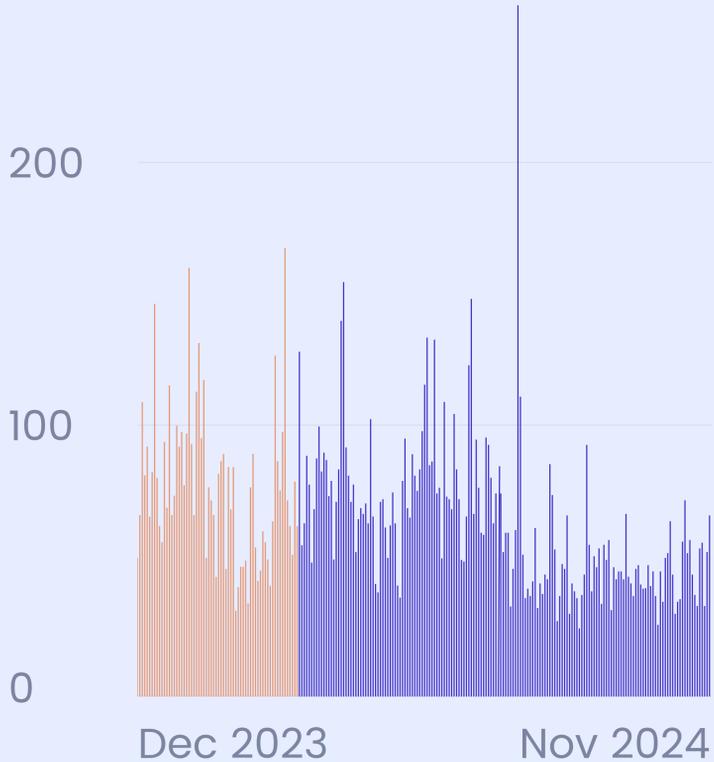
Basw Fees Paid Before /AfterDencun ETH

■ Before ■ After



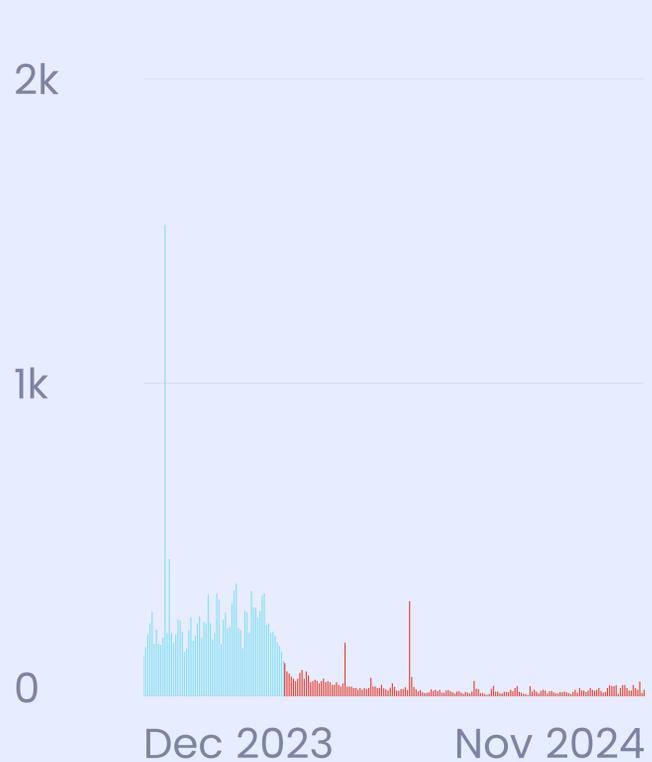
Optimism Fees Paid Before /AfterDencun ETH

■ Before ■ After



zkSync TXs Before/After Dencun ETH

■ Before ■ After



Source: Dune Analytics (@obchakevich)

# To Ethereum Node Validation Rate

The Dencun upgrade also impacted the node validation rate by implementing EIP-7514, which introduced a maximum epoch churn limit. This measure shifted the validator set growth from an exponential to a linear model, effectively controlling the rate at which new validators could join the network. Post-upgrade observations revealed a noticeable slowdown in the node validation rate growth, aligning with the upgrade's objective to manage validator additions and prevent network congestion. This controlled growth not only ensures network stability but also provides developers with the necessary time to address potential security and scalability challenges, thereby enhancing the long-term vision of Ethereum as a secure and scalable proof-of-stake network.

## Ethereum Node Validation rate



Source: Dune Analytics (@ashkey)

The implications of high and low node validation rates are multifaceted. A high node validation rate enhances network security by increasing the cost for potential attackers, thereby making it more resilient against malicious activities. Additionally, a higher node validation rate contributes to the network's stability and decentralization, ensuring consistent operation. However, the concentration of staked ETH among a few validators poses a security risk, as it could potentially be exploited if these validators are compromised.

## **Macroeconomic & Political Events**

While internal developments and technological upgrades, such as the Dencun upgrade, are driving significant advancements in the node validation market, the external environment also plays a pivotal role in shaping its trajectory. Macroeconomic events, such as the interest rate decisions by the Canadian and European central banks, initially provided support to ETH performance. However, as suggested by Bitfinex, subsequent economic data, particularly strong U.S. employment figures, dashed hopes of a near-term Fed rate cut, leading to a sharp downturn in ETH performance.

However, Towards the end of the year, the re-election of Donald Trump was perceived as a positive catalyst for the crypto market. His administration's potential for regulatory reforms and blockchain infrastructure investments was seen as favorable, contributing to a stabilization or further boost in cryptocurrency valuations post-downturn. Therefore, we remain optimistic about the market's prospects. We discuss this in more detail in Part 6, "Risks and Challenges".

# Node Validation & Restaking

# Node Validation

## 2024 Ethereum Node Validation

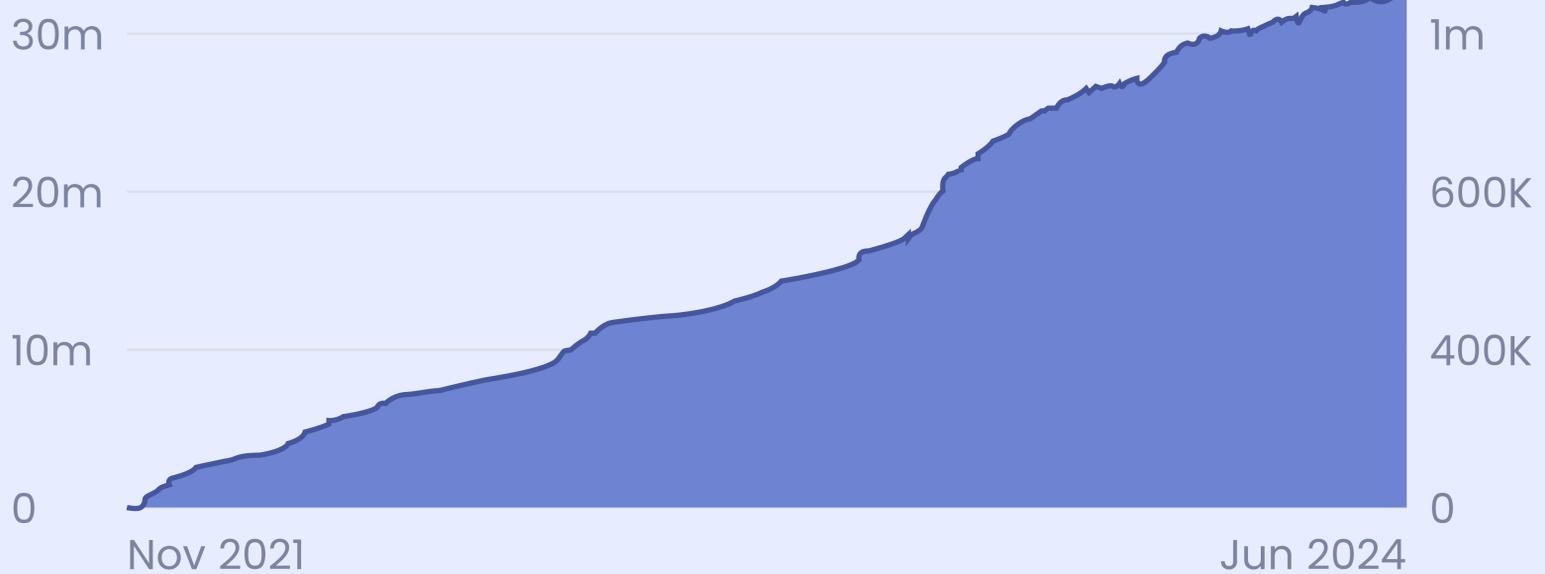
In 2024, the Ethereum node validation market exhibited significant growth and stability. By the end of the year, the number of validators reached 1,084,293, which was the maximum observed during that period.

### Ethereum Active Validators

Staked ETH and Validators Overtime

# 1,084,293

■ Validators ■ Unidentified



Source: Dune Analytics (@hashkey\_cloud)

Regarding node validation returns, the daily annual percentage rate (APR) for Ethereum node validation was approximately 3.73% by November 25, 2024, towards the end of the year. The breakdown of returns was as follows:

- **Consensus Layer (CL) Yield**

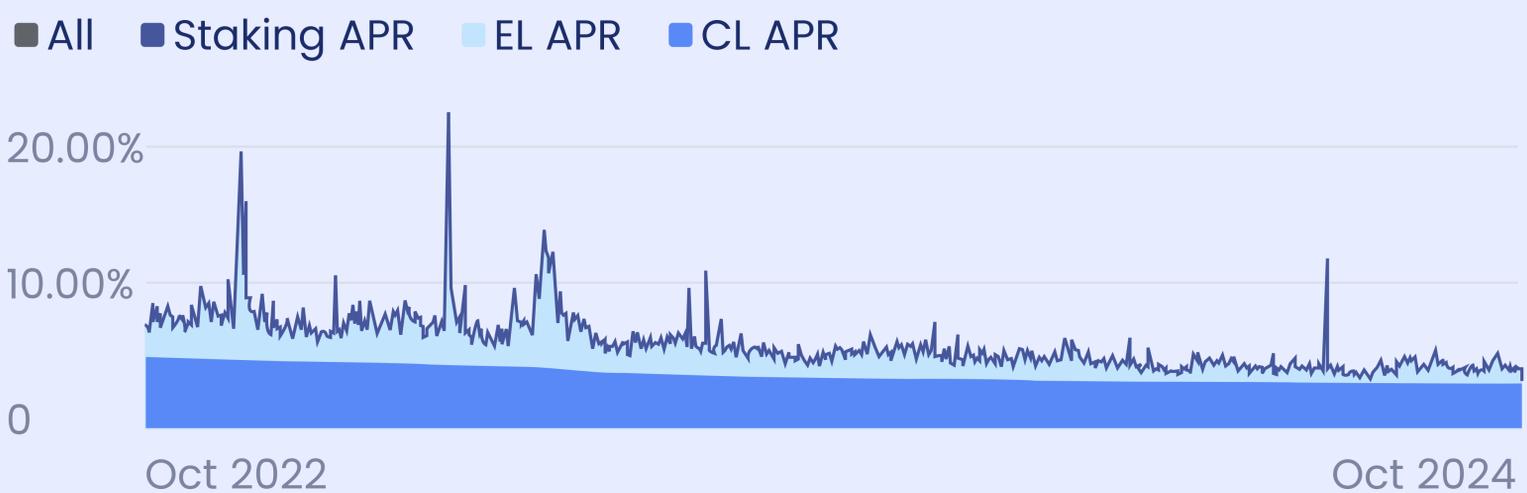
2.82%, derived from the base rewards for validators.

- **Execution Layer (EL) Yield**

0.90%, generated from MEV (Miner Extractable Value) and transaction fees.

In total, the node validation rewards distributed across the network amounted to 2.4787M ETH, highlighting the sustainability of Ethereum's node validation economic model.

### Ethereum APR Overtime



Source: Dune Analytics (@hashkey\_cloud)

Over the past two years, we have observed a steady decline in rewards for Ethereum stakers, a trend that is influenced by two primary factors. Firstly, the increasing volume of staked ETH and the growing number of validators have led to a dilution of rewards. As more participants join the network, the rewards are spread thinner, resulting in lower individual returns. Secondly, a reduction in transaction activity on the Ethereum

blockchain has led to decreased fees and reduced opportunities for MEV (Maximal Extractable Value), further impacting stakers' revenues.

## Ethereum Consensus APR

Ethereum Staking Issuance and APR



Source: Dune Analytics (@dataalways)

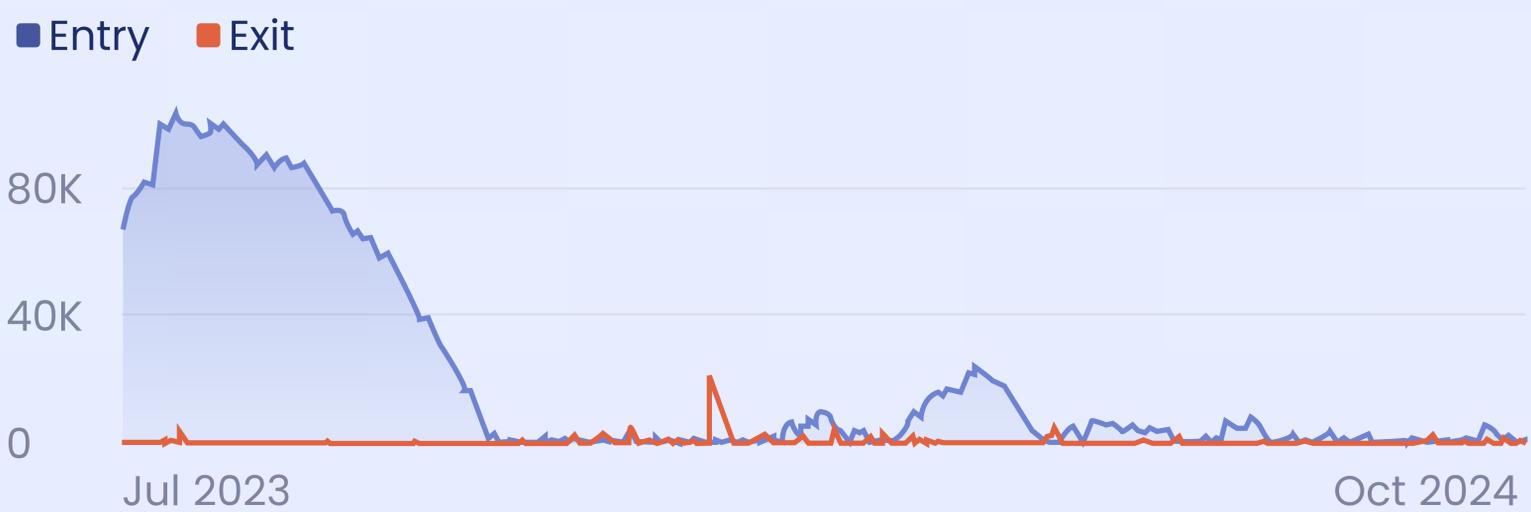
As suggested by Galaxy, since only 8 new validators or a maximum of 256 ETH in effective balance can be added to Ethereum every epoch (i.e., every 6.4 minutes), assuming that the maximum number of validators is added in each epoch from now until the end of 2025, Ethereum would require over a year to reach a 50% node validation rate.

Historically, the demand to enter the node validation queue has outpaced exits, a trend that is expected to continue. Factors that could further boost node validation demand include the potential for additional rewards through restaking, a resurgence in DeFi activity

that increases MEV, and regulatory changes that facilitate node validation in traditional financial products like ETFs.

## Validator Queue Overtime

ETH Staking(Historical Validator Queue-The Block)



Source: Dune Analytics (@hashkey\_cloud)

After the Shapella upgrade, we did not see the anticipated "one-side" withdrawal from the ETH 2.0 Blockchain. After the initial withdrawal, the daily withdrawal level has calmed and the deposit amount has exceeded the withdrawal in May.

## Price and Net Flow-Post Shanghai

ETH Staking (Daily Price and Staking Net Flow-Post Shanghai)

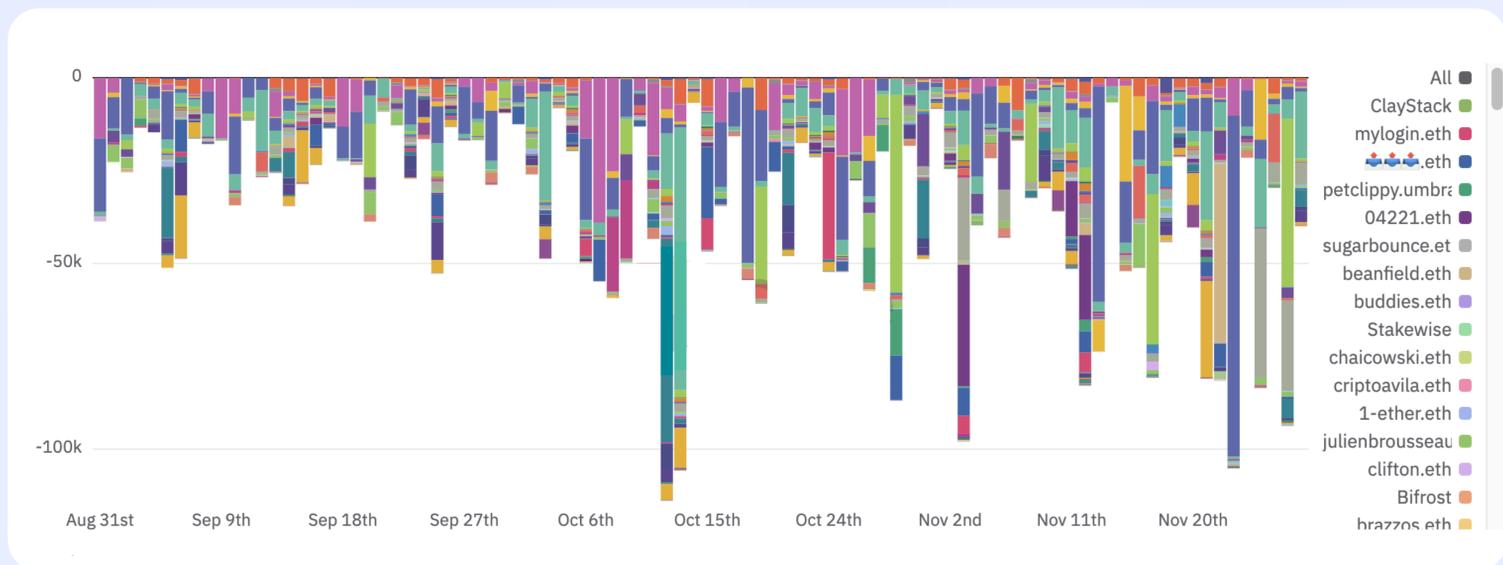
■ Entry ■ Withdrawal ■ Deposit ■ Price



Source: Dune Analytics (@hashkey\_cloud)

If we break down the withdrawals by entity, we'll see that most initial withdrawals are derived from Kraken, primarily due to regulatory requirements <https://www.sec.gov/news/press-release/2023-25>. If we remove the regulatory factor, most entities still have positive net deposits after the upgrade, demonstrating that the market is still bullish on node validation.

## Daily ETH Withdrawal breakdown by Entity



Source: Dune Analytics (@mjlinkraken)

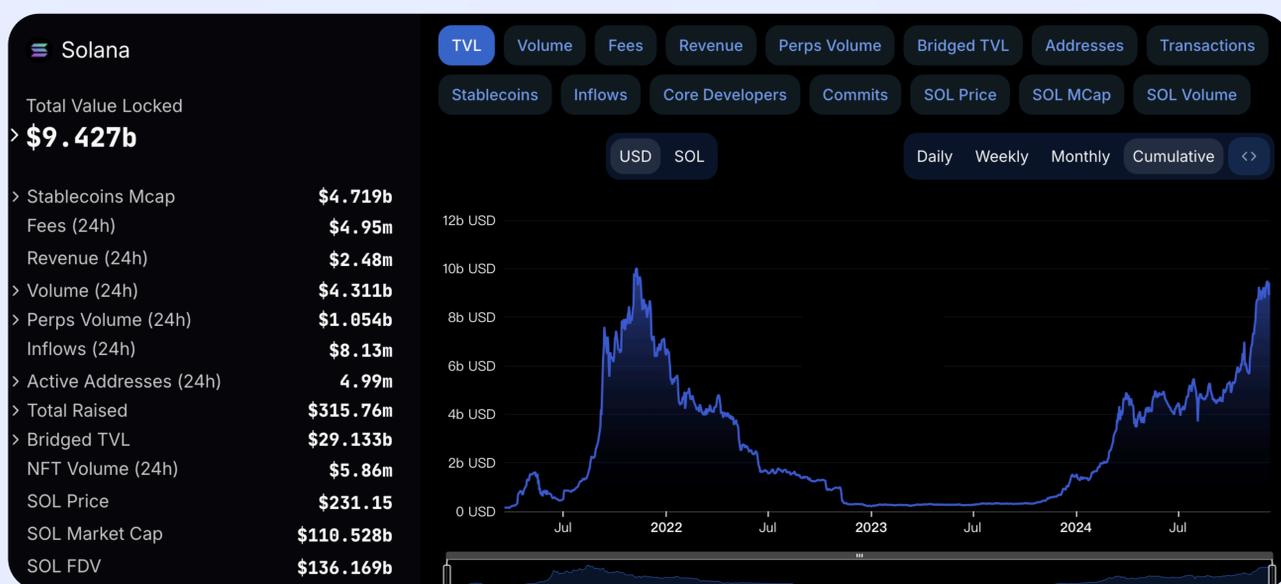
In conclusion, while the Ethereum node validation market faces challenges such as reward dilution and reduced transaction activity, the future holds promising growth opportunities. Stakeholders should remain adaptable to these evolving dynamics, ensuring strategies are aligned with the shifting market conditions.

## Solana: A Year of Renaissance and Resilience

The year 2024 has proven to be transformative for Solana, marking a period of extraordinary growth and enhanced stability. The network has achieved a remarkable market capitalization of approximately \$100B, solidifying its position alongside industry giants

Bitcoin and Ethereum. Solana's ecosystem has demonstrated impressive growth, with TVL reaching \$7.85B and daily trading volumes consistently averaging around \$7B by the end of 2024.

## Solana Network Overview



Source: Defillama.com

- **Network Performance and Technical Achievements**

Solana's network reliability has seen dramatic improvements throughout 2024. In stark contrast to the fourteen major outages recorded in 2022, this year witnessed only one significant disruption in February. This enhanced stability can be attributed to several major technical upgrades implemented during the year. The introduction of QUIC-based Transaction Processing Units has revolutionized network communication efficiency, while the implementation of stake-weighted Quality of Service has significantly improved resource allocation and network prioritization.

The network's performance metrics have remained consistently impressive, with transaction confirmation times staying under two seconds and costs remaining below \$0.01. User activity has reached unprecedented levels, with active addresses surpassing 54M by July 2024, representing a remarkable year-over-year growth of 151%.

- **Ecosystem Development**

The Solana ecosystem has flourished in 2024, particularly in the decentralized exchange (DEX) and memecoin sector. Jupiter Exchange has emerged as the market leader, offering comprehensive DEX aggregation services including advanced swap functionality and sophisticated limit orders. Raydium has maintained its position as the primary liquidity pool platform, achieving an impressive seven-day spot volume of \$16.5B by mid-November.

The trading infrastructure has seen significant innovation through platforms like Pump.fun, which introduced a revolutionary bonding curve mechanism and automatic LP provision. The platform's projected annual fees of \$370M demonstrate the robust financial performance of Solana's trading ecosystem. Trading clients such as Bonkbot and Photon have also shown remarkable success, with annualized fees of \$240M and \$470M respectively.

- **MEV and Validator Economics**

The implementation of Maximal Extractable Value (MEV) has been a game-changer for Solana's validator economics in 2024. This development has democratized value extraction while enhancing validator rewards and ensuring ecosystem sustainability. The node validation ecosystem has seen remarkable growth through platforms like Jito node validation, which now manages 14.1M staked SOL, and Marinade Finance, with 4.8M mSOL in circulation.

Sanctum has emerged as a significant player in the liquid node validation domain, managing 7.43M staked SOL and pioneering innovations in LST launch platforms and multi-LST pools. The introduction of restaking mechanisms has further enhanced capital efficiency and created multiple reward streams for participants.

- **Institutional Adoption**

The year has witnessed unprecedented institutional interest in Solana. The integration of PayPal USD (PYUSD) marked a significant milestone in bridging traditional finance with the Solana ecosystem. Major financial institutions have developed robust infrastructure including enterprise-grade tools, institutional trading platforms, and comprehensive compliance frameworks.

- **Financial Performance and DeFi Landscape**

Solana's financial metrics have shown remarkable strength throughout 2024. Beyond the impressive market capitalization and TVL figures, the network has generated substantial revenue through protocol fees, MEV rewards, and ecosystem token value appreciation. The DeFi landscape has matured significantly, with lending markets showing healthy interest rate dynamics and robust collateralization ratios.

- **Future Outlook**

Looking ahead to 2025, Solana's technical roadmap focuses on further stability improvements, scaling solutions, and enhanced cross-chain integrations. The planned integration of Synthetic Bitcoin (sBTC) and continued DeFi innovation suggest strong growth potential. The ecosystem is well-positioned for expanded institutional adoption and increased market share.

# Restaking Market Overview for 2024

2024 was a year of rapid growth for crypto, with the emergence of protocols and on-chain ecosystems around restaking. By reinvesting node validation rewards, these protocols offer a mechanism similar to

compound interest, allowing investors to grow their holdings exponentially. This section explores the significance, innovations, and challenges of restaking protocols, with a focus on key players like EigenLayer, Babylon, Solayer, etc.

## Restaking TVL Rankings Top 5

Rank	Name
1	 Eigenlayer
2	 Symbiotic
3	 Babylon
4	 Karak
5	 exSat

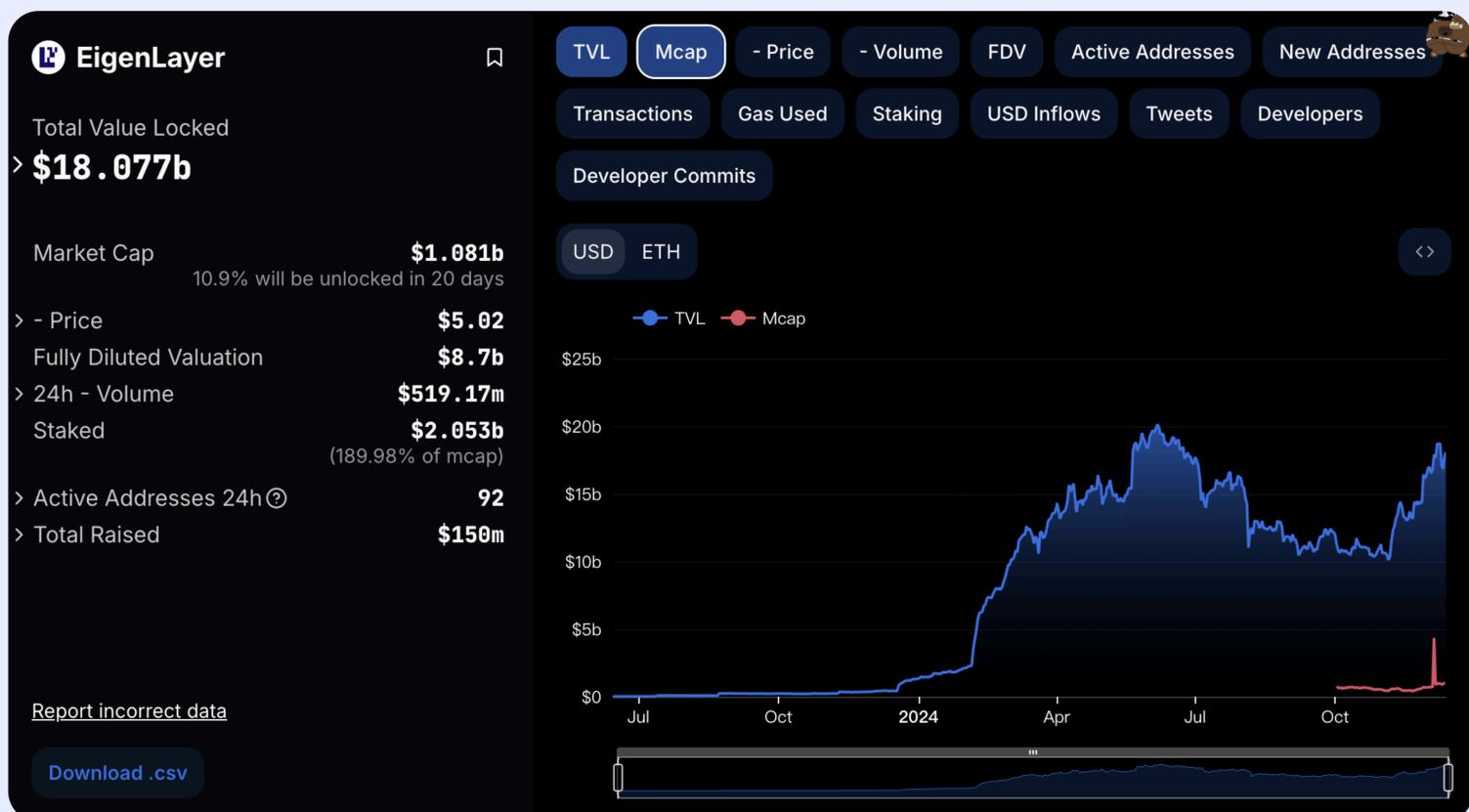
Source: Defillama.com

## The Rise of EigenLayer

EigenLayer has emerged as a dominant force in the restaking landscape with a 72.23% share by the end of 2024. Its TVL had surged by 1386%, reaching a staggering \$19.96B, while its overall market cap climbed to

\$869.28M Led by Pendle, Ether.fi and Ethena. This impressive growth positions EigenLayer as one of the leading protocols in the restaking space, driven by its innovative approach to extending Ethereum's security to middleware, including data availability layers, bridges, etc. EigenLayer's success is rooted in its ability to provide enhanced security and rewards, making it a preferred choice for many stakeholders.

## Eigenlayer Metrics Overview



Source: Defillama.com

EigenLayer supports two types of restaking methods: liquid restaking and native restaking. Liquid restaking allows for restaking using LST, while local restaking requires directly managing an Ethereum node. In addition, EigenLayer introduces a points system that awards points to the staked ETH of restakers every hour to measure their contribution to the network.

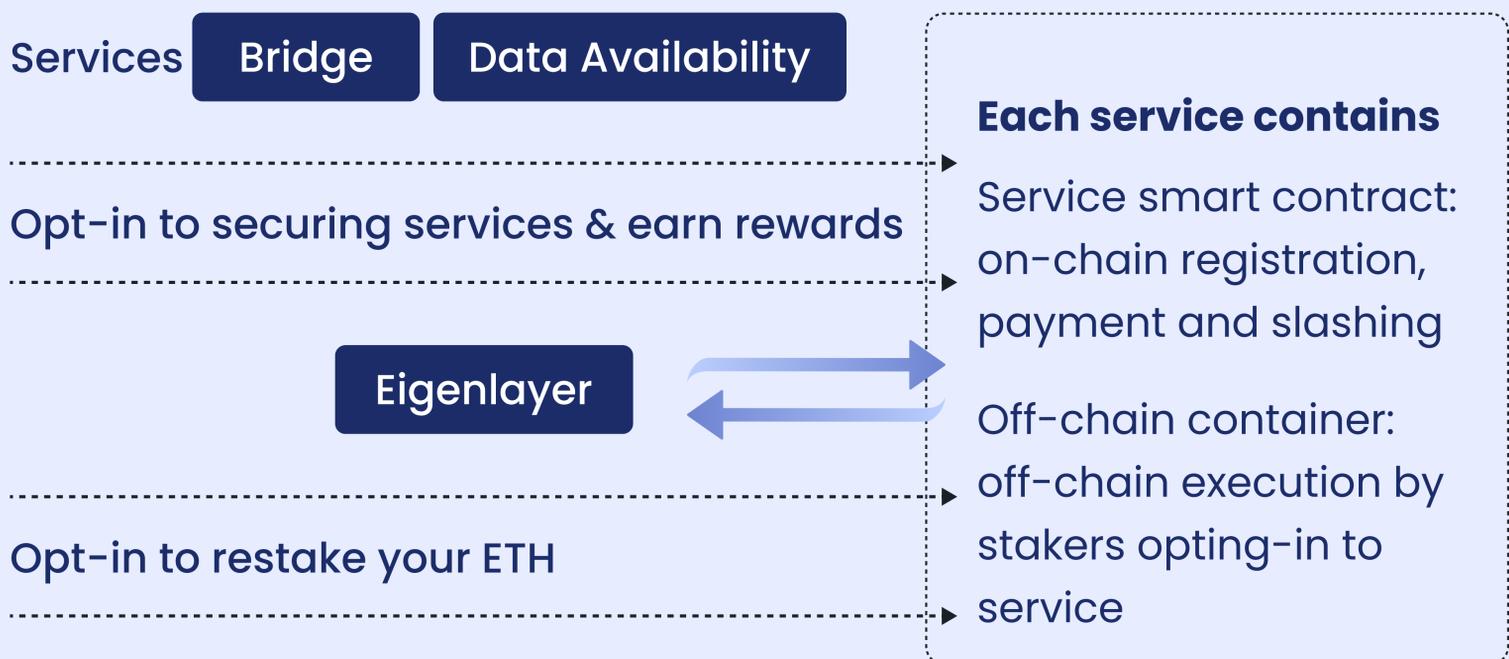
The restaking mechanism of EigenLayer not only improves the capital efficiency and decentralization of ETH but also realizes the flexible circulation and efficient utilization of staked assets through smart contract mechanisms.

The core functions of EigenLayer include:

- **The restaking mechanism:** Users can restake their staked ETH or LST into EigenLayer's smart contracts to secure various **Actively Validated Services (AVS)**, thereby obtaining additional node validation returns and rewards.
- **Decentralized trust market:** EigenLayer creates a decentralized trust market that allows validators to independently decide which modules to provide security for based on risk and return. This model is similar to a venture capital firm, supporting innovation but accompanied by risks.
- **Modular network support:** EigenLayer supports multiple modules such as consensus protocols, data availability layers, virtual machines, etc. These modules can utilize stakers as validation nodes to improve security and efficiency.
- **Economic security sharing:** By aggregating the ETH security of all modules, EigenLayer enhances the security and decentralization degree of decentralized applications. At the same time, Ethereum equity owners can also utilize the new fee opportunities generated by these modules to create more value.

- Innovation and flexibility: EigenLayer allows developers to implement new distributed validation modules without the need to establish their own trust networks, relying on the security and decentralization provided by Ethereum equity owners.
- Market and governance: EigenLayer adopts a free market governance mechanism, allowing stakers and protocols to negotiate and reach a consensus on the terms of restaking.

## Eigenlayer Service Framework



To further enhance its ecosystem, EigenLayer introduced a one-year token incentive program in October 2024. Retroactively starting from August 15, this program adds 4% of Eigen tokens to circulation weekly, aiming to distribute 66,945,866 EIGEN tokens or 4% of the total supply. The majority of these rewards are directed

towards ETH and LST stakers and their operators, with some allocated to EIGEN stakers and specific operators. This strategic initiative not only boosts liquidity and collaboration but also encourages broader participation and capital inflows.

EigenLayer's data availability solution, EigenDA, now supports the restaking of ERC-20 tokens, expanding its technological reach beyond Ethereum. This expansion not only enhances its versatility and potential user base but also makes it a more integral part of the DeFi ecosystem. Such advancements solidify EigenLayer's technical prowess and position it as a leader in innovation within the restaking space.

In response to community opposition to an airdrop plan, the Eigen Foundation offered additional EIGEN tokens to valid users and compensated those who were excluded but eligible. This responsiveness underscores EigenLayer's commitment to community engagement and trust-building, which is crucial for long-term success. By actively listening to and addressing community feedback, EigenLayer strengthens its user base and fosters a loyal ecosystem.

Coinbase's announcement to support EigenLayer on the Ethereum network significantly boosts its token's liquidity and market acceptance. This listing increases visibility and accessibility, potentially enhancing the token's price and adoption. Such support from major exchanges is a

testament to EigenLayer's growing influence and acceptance in the crypto market.

While EigenLayer dominates Ethereum, protocols like Karak and Symbiotic are evolving with multi-chain asset support as well. The current market competition encourages technical innovation and differentiation among protocols. Through its technical architecture and community development, EigenLayer introduces new solutions to the node validation sector. As it expands beyond the Ethereum ecosystem, EigenLayer is adapting to market changes and exploring development opportunities in the restaking market. Based on its technical framework and development roadmap, EigenLayer may have certain impacts on the restaking market going forward. Market participants are monitoring this protocol's performance in terms of technical innovation and ecosystem expansion.

# Babylon: A Game-Changer in BTC Staking

Babylon is a revolutionary protocol that enables Bitcoin holders to engage in staking without surrendering control over their assets. By locking their BTC in a self-custody staking contract, users contribute to the security of PoS chains while earning rewards. Launched on October 8, 2024, Babylon has rapidly gained popularity, attracting over 20,000 deposit addresses and securing more than 23,000 BTC.

Babylon's entry into the staking arena has catalyzed the growth of LRT within the Bitcoin ecosystem. The protocol's popularity has driven deposits across various LRT platforms. Bedrock, PumpBTC, Lorenzo, Solv, and Lombard collectively control nearly 85% of Babylon's staking pool. These protocols have capitalized on Babylon's success by offering users a variety of staking options and incentives.

## Babylon Mainnet Cap1+Cap 2 Details

🌀 Babylon TVL

**23891.68 BTC**

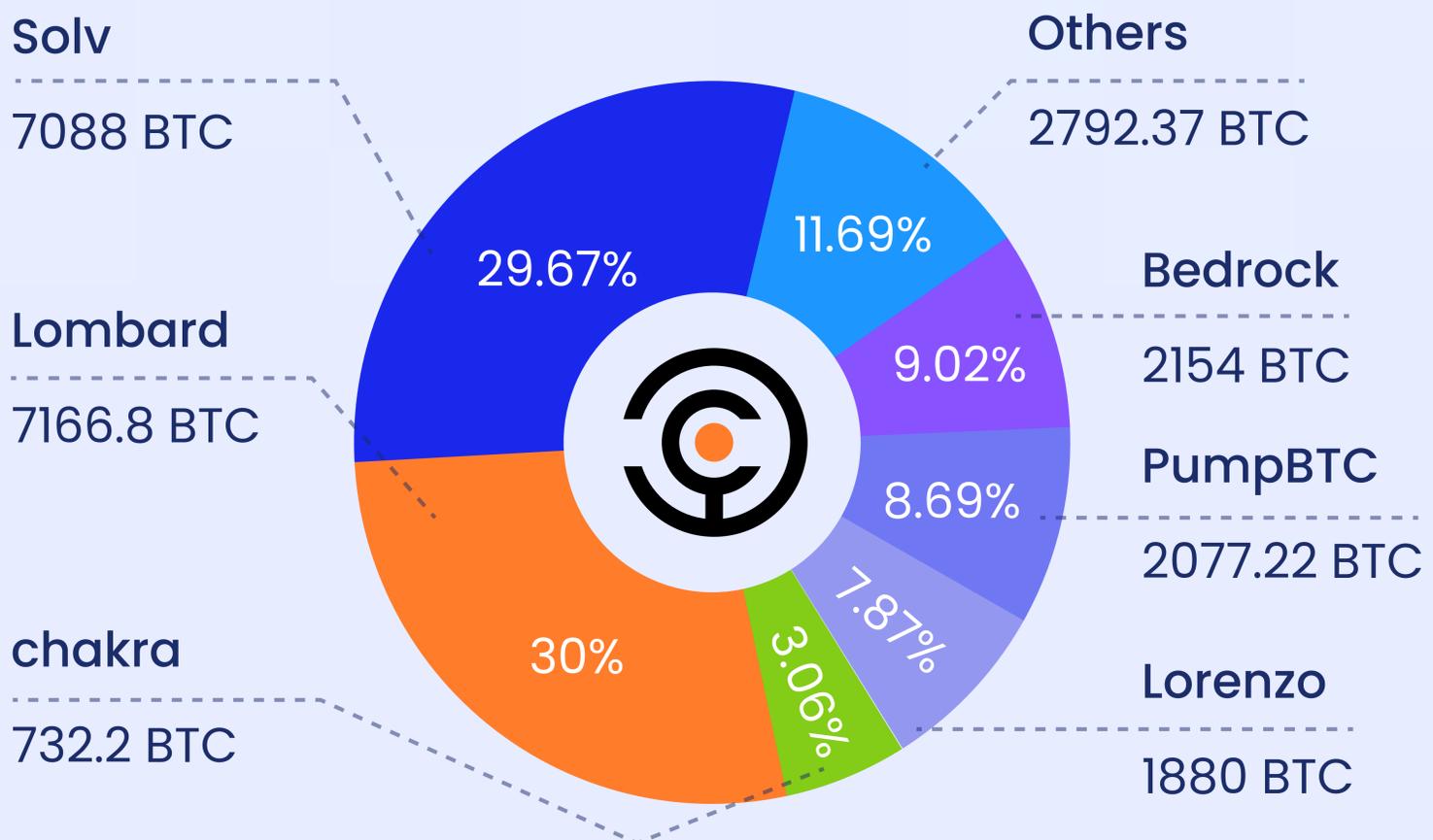
\$1,508B

Total Delegations

**33.57k**

Total Stakers

**25.31k**



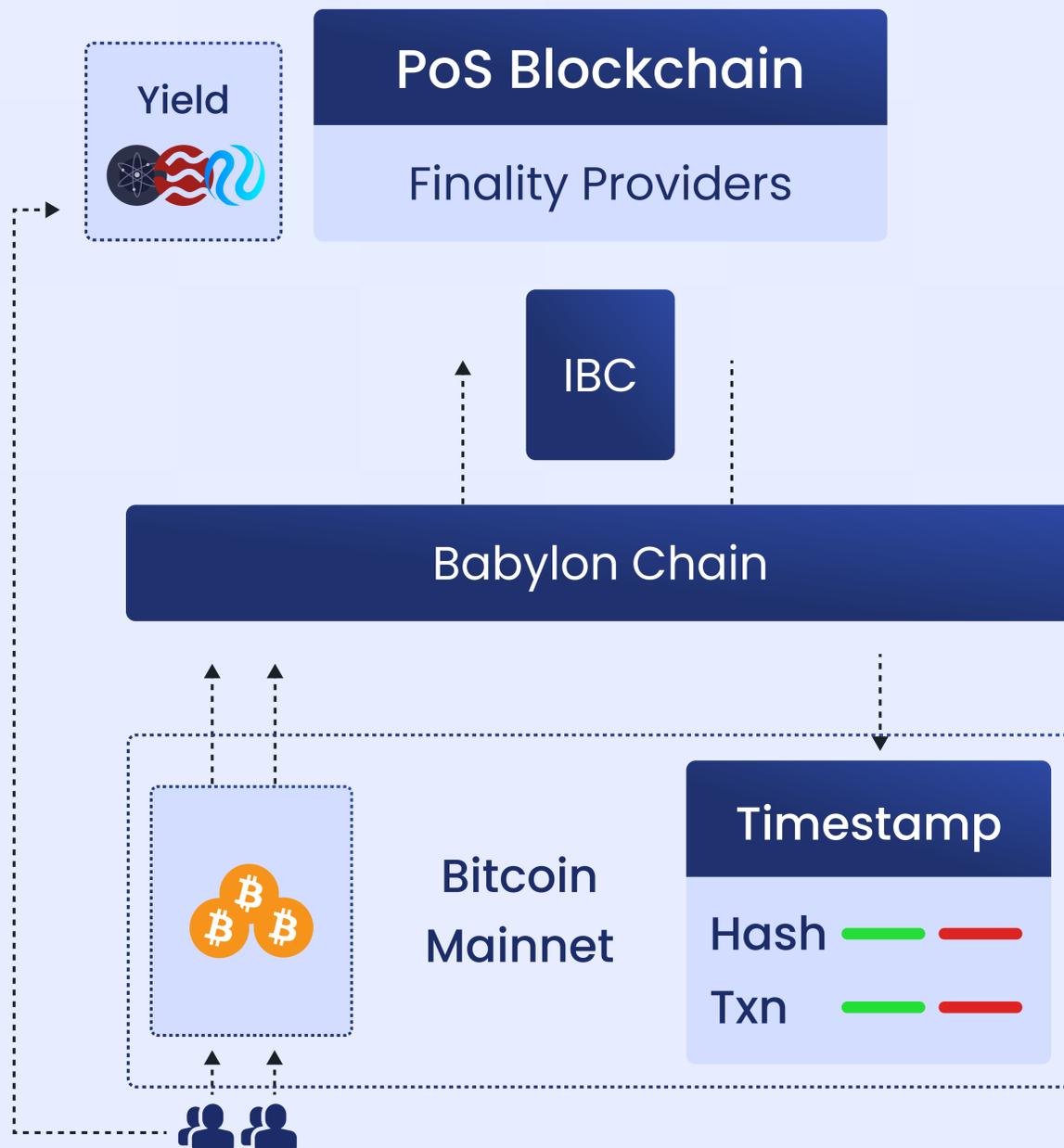
Source: BTCEcosystem

Since Babylon set a time limit for staking in the early stage, LRT protocols had to stake and process points independently. As a result, the number of pre-staked BTC is not equal to the number of actually staked BTC in the end. This is where the concept of PPC (Points Per Coin) needs to be introduced. In the context of the Babylon LRT protocol, PPC can be simply understood as Babylon's staking efficiency. When a user stakes different LRTs, even if the amount of staked BTC is the same, the

amount of points earned may vary, leading to different actual revenues. For instance, the first time Babylon limited the number of BTC stored in each LRT to 250. However, Solv staked more than 250 BTC, so Solv needs to handle this clearly when sharing points.

Babylon presents a unique opportunity to tap into Bitcoin's vast reserves, potentially driving exponential growth in the staking economy. As more users embrace staking, Babylon's TVL is expected to surge, challenging the dominance of traditional staking protocols like Eigenlayer and Symbiotic. It is worth noting that since August, Symbiotic has begun to accept LBTC, tBTC, and other BTC LRT asset staking, partially diverting the market share of BTC LST.

## Babylon enables Bitcoin Shared security via Staking



Babylon is poised to revolutionize the staking landscape by unlocking the potential of Bitcoin's vast reserves. With a TVL of \$2.337B and a growing user base, Babylon is well-positioned to become a leading player in the staking ecosystem. Although challenges remain, the protocol's innovative approach and strategic partnerships position it for continued growth and success in the years to come. As the staking market evolves, Babylon will undoubtedly play a pivotal role in shaping the future of decentralized finance.

# Solayer: Restaking Protocols on Solana

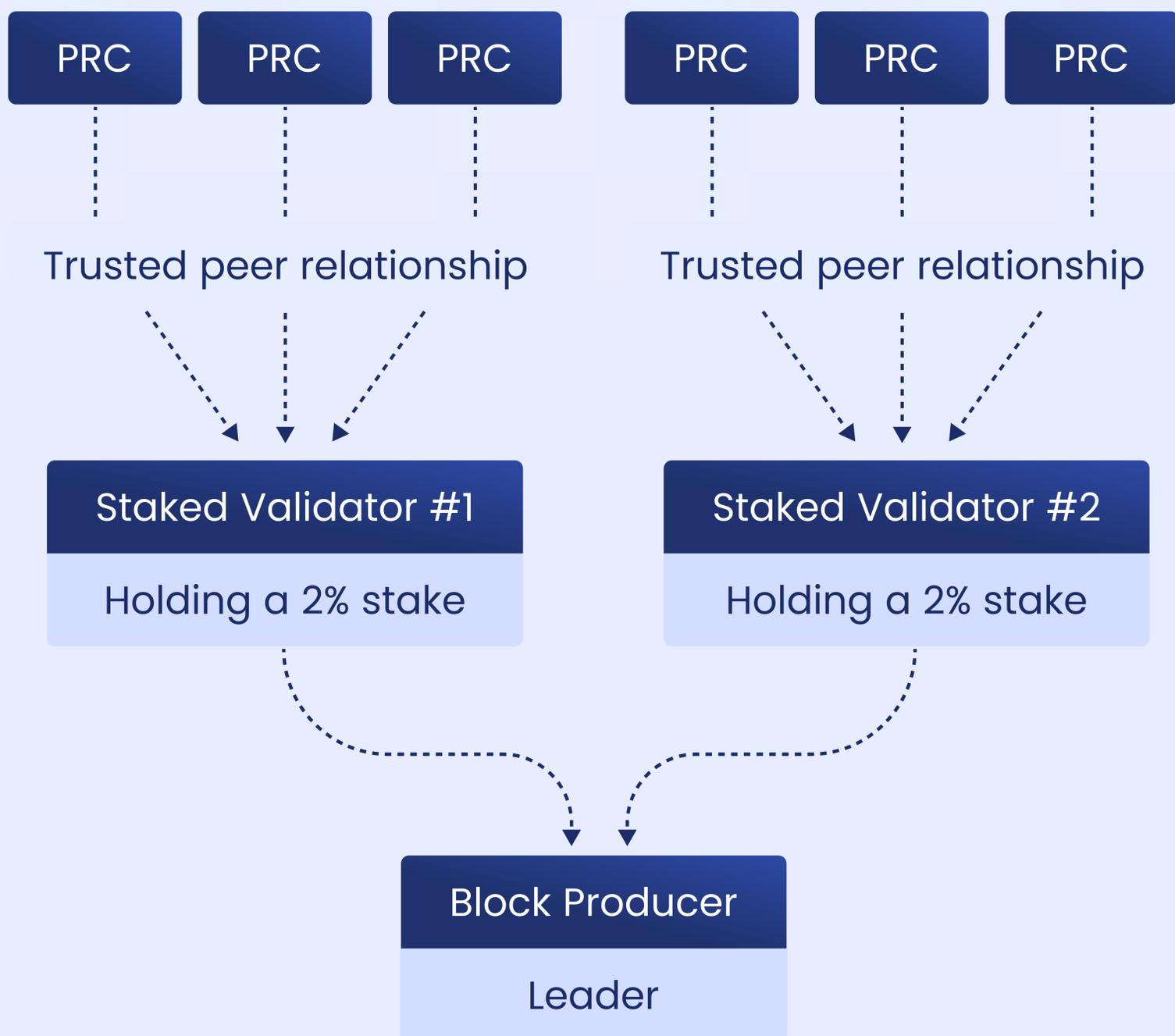
Solayer is a restaking protocol built on the Solana blockchain, aiming to enhance capital efficiency by reusing staked assets and providing higher network bandwidth and security for decentralized applications (dApps).

Solayer was founded in 2024 by Rachel Chu and Jason Li. It is a restaking protocol specifically designed for the Solana ecosystem. The protocol allows users to re-stake SOL tokens or liquid staking tokens (LST) to ensure the bandwidth of dApps, improve performance, and obtain additional rewards. The core mechanisms of Solayer include the Shared Validator Network (SVN) and endogenous Active Validation Service (AVS), which are designed to optimize network resource allocation and improve transaction processing efficiency.

The technical architecture of Solayer mainly consists of two core components: token relocking and shared validator network. Token relocking is responsible for asset flow, conversion into Solayer-specific tokens (such as sSOL), delegation management, and the return of MEV enhancement. The shared validator network realizes cross-chain interoperability, allowing Solana-based chains to share security and optimize resource allocation. In addition, Solayer utilizes Stake-weighted Quality of Service (SwQoS) technology to ensure

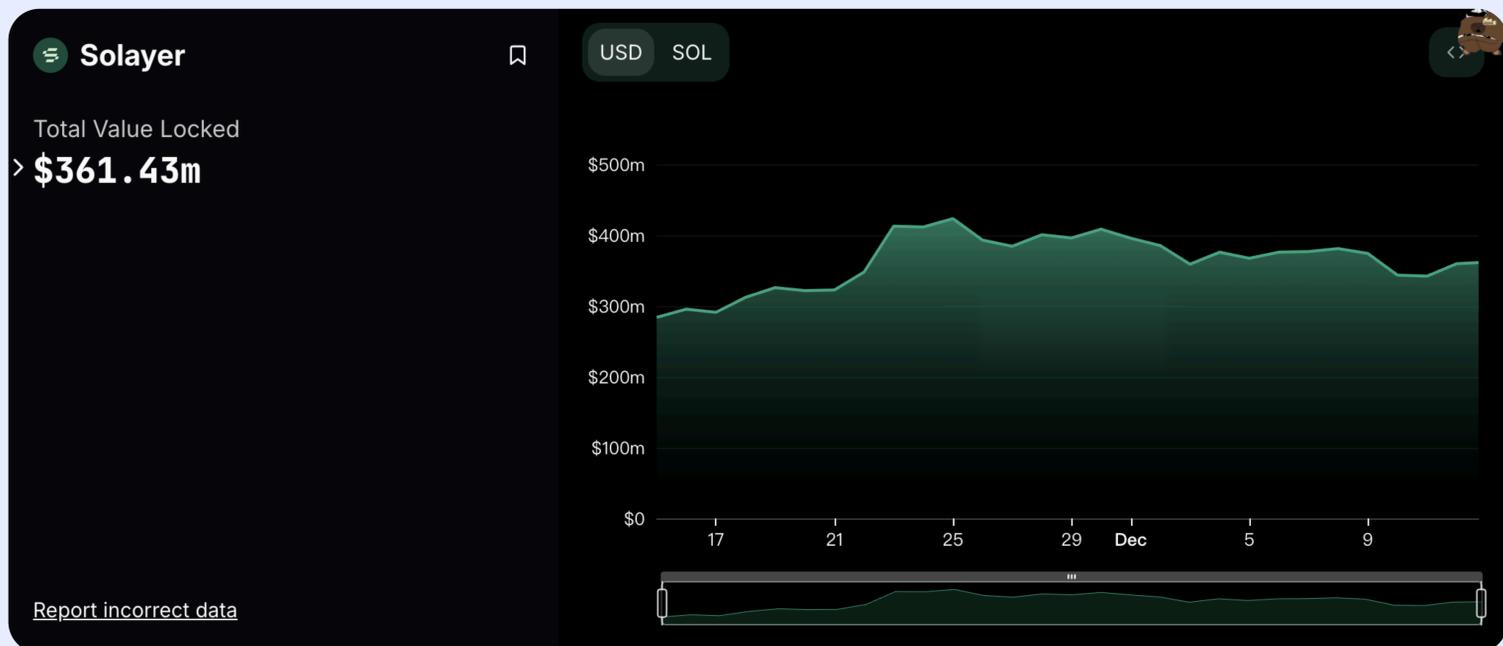
transaction priority for large stakers, thereby improving network processing efficiency and reducing the possibility of malicious transactions.

Txs proxied through Staked Validator#1 are prioritised  
Additional Sybil resistance mechanism and higher Qos



Since its soft launch in May 2024, Solayer has rapidly risen to become one of the top projects in the Solana ecosystem. Its TVL has exceeded \$200M. In the seed round financing, Solayer raised \$12M from institutions such as Polychain Capital and Binance Labs, with a valuation reaching \$80M. These funds will be used to expand the team, integrate new protocols, and prepare for the second stage of the platform.

## Solayer Metrics Overview



Source: Defillama

As of December 2024, Solayer's TVL has exceeded \$361.43M, becoming one of the largest restaking protocols in the Solana ecosystem. Solayer plans to launch its native token in the future and continue to expand its influence in the Solana ecosystem.

Through its innovative restaking solution and the advantages of the Solana network, Solayer is gradually

expanding its market share and attracting the attention of a large number of investors. Despite the challenges, its potential in improving network bandwidth and security makes it a project worthy of attention.

## Other Notable Restaking Protocols

While EigenLayer and Babylon lead the market, other protocols like Symbiotic and Karak are making significant strides, each bringing unique innovations to the restaking ecosystem.

By the end of 2024, Symbiotic had achieved a TVL of \$2.624B, showcasing its growing influence in the restaking space. One of its standout features is its multi-asset support, allowing developers to use various ERC-20 tokens, such as Lido's stETH, Ethena's ENA, and sUSDE, as collateral. This flexibility not only enhances economic security but also provides developers with the freedom to tailor their security strategies to specific needs. Symbiotic modular design further empowers network developers to control every aspect of the node validation implementation, from asset selection to reward structures. Moreover, its immutable core contracts reduce external governance risks, ensuring a secure and stable environment.

asset support, including ETH, LST, LRT, Pendle LP tokens, and stablecoins. Its cross-chain node validation capabilities allow for deposits from various blockchain networks, fostering greater interoperability and integration. Karak's approach to standardizing capital requirements and implementing a validator market mechanism simplifies the development process and enhances network compatibility. The launch of its second-layer network, K2, serves as a sandbox environment for upgrades, ensuring stability and security before they are rolled out on the main network.

Both Symbiotic and Karak emphasize customizable security, enabling services to adjust their security levels based on specific demands, thus optimizing costs. Their commitment to decentralization and security is evident in their collaborations and mechanisms designed to protect cross-chain assets and simplify validator operations. These protocols are not only diversifying the restaking ecosystem but also driving innovation, offering developers and users a range of options to enhance their node validation strategies.

## **Liquid Restaking: Unlocking Multi-Layer Yields in the Modular Restaking Era**

Given that prices fluctuate, measuring TVL in terms of token amounts is more appropriate. Since TVL is easily

double-counted, we hereby aggregate different data sources and try our best to reduce duplicate calculations. Our data source includes Dune, DefiLlama, and some BTC L2 explorer APIs.

## LRT Protocols TVL by Category(YTD)



Our data shows that the Liquid Restaking Token (LRT) protocols experienced more than 70x growth, with its TVL surging from \$285.85M on January 1 to \$22.58B YTD. While ETH LRTs account for the majority of the market share, BTC LRTs are also booming.

Whether or not the protocols in the Babylon ecosystem can be considered "LRT" protocols is still up for debate. Generally, restaking means you earn several kinds of yields at the same time:

- **Node validation yields**

For ETH/SOL, it's the native PoS yield after node validates them.

- **Restaking yields**

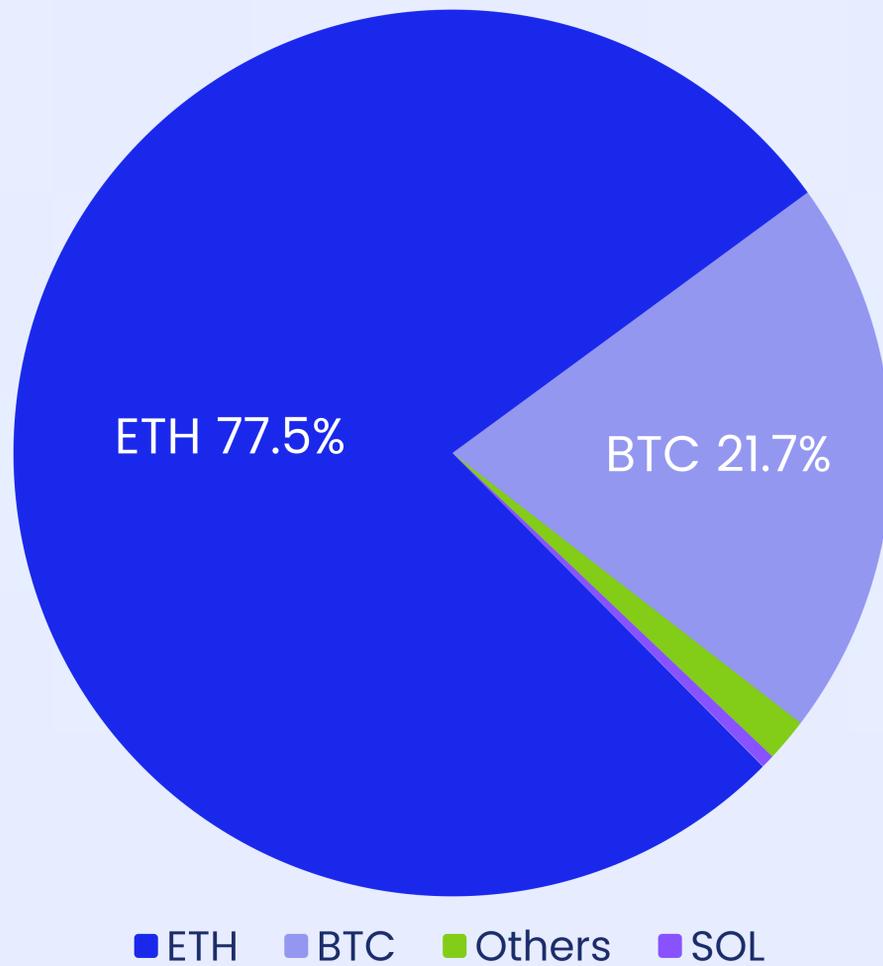
Earn through providing shared security by LST (stETH/jitoSOL) or Native Token (ETH / SOL) to the restaking protocol.

- **Airdrop yields**

Earn points of both restaking and LRT protocol you chose. Points will further be converted to tokens when airdrops.

Since Babylon provides shared security services like other restaking protocols, we hereby call these protocols that help you deposit your BTC into Babylon LRT protocols. However, it is worth noting that the BTC deposited into Babylon only has restaking yields here since BTC is mined instead of issued as rewards.

## LRT Protocols Market Share



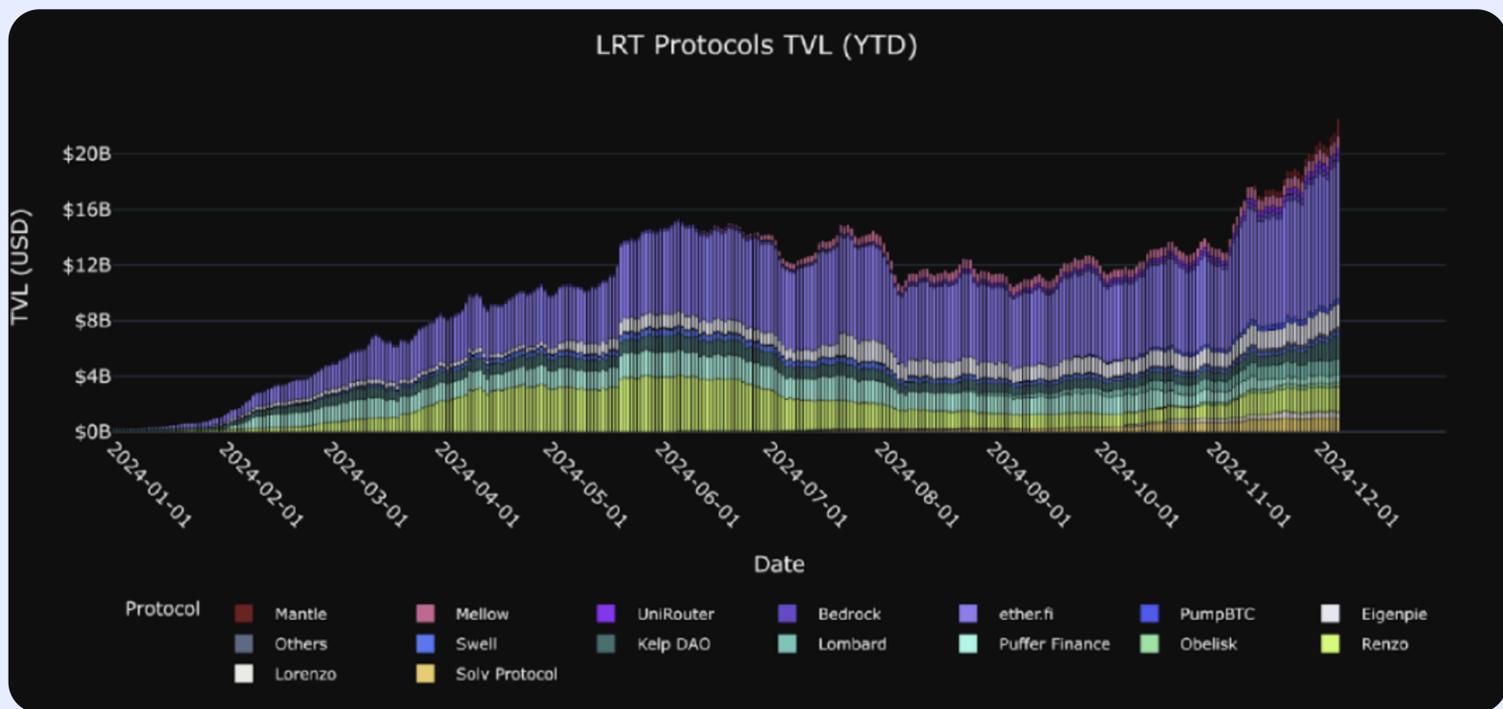
As of December 6, 2024, ETH protocols dominate the liquid restaking sector with a market share of 77.5%. BTC protocols are following behind with a 21.7% share. SOL and other assets had a market share of around 0.8%.

## Market Share of LRT Protocols (YTD) & ETH/BTC Rate



ETH LRT protocol dominance is mainly attributed to EigenLayer, the first restaking protocol built on Ethereum, giving it a significant first-mover advantage. Following the launch of the Babylon testnet in June 2024, the BTC LRT protocols have also seen rapid development. On November 21, the BTC protocol's market share peaked at 26.37%. This surge is closely correlated with the ETH/BTC rate, which stood at 0.032 on that day, marking its lowest level since March 2021.

## LRT Protocols TVL(YTD)



To identify the key players in LRT, we studied the market share of the top 15 LRT protocols by TVL and categorized other protocols as “Others” in the above chart. Our findings show that ether.fi has been dominating the liquid restaking market with a share of over 40%. As of Dec. 6, it still holds a 43.96% share (~\$9.9B) among all protocols.

## Ether.fi TVL (USD)

Annual Report (ether.fi LRTs TVL)

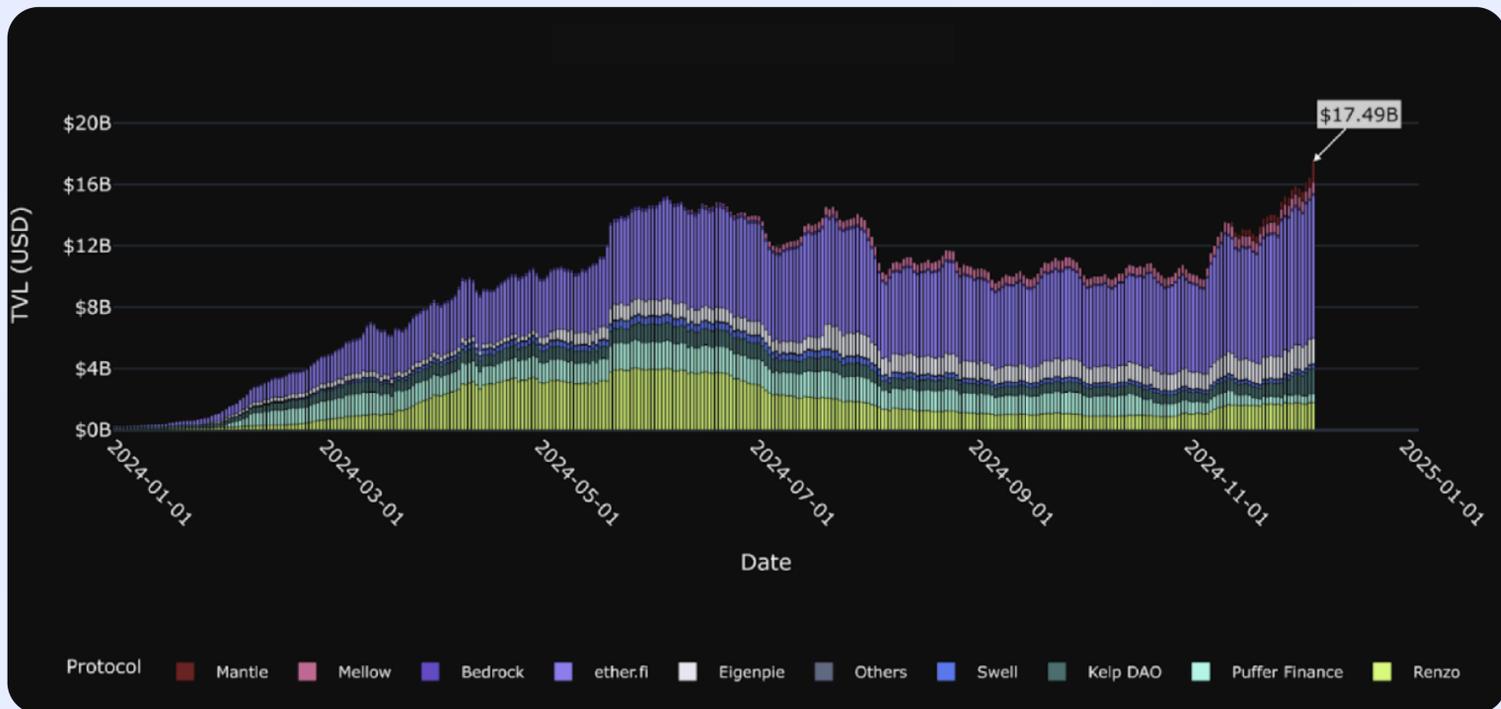
- All
- Total TVL(\$)
- eBTC(Symbiotic)
- eEIGEN(Eigenlayer)
- eETH(Eigenlayer)
- weETHK(Karak)
- weETHs(Symbiotic)
- eUSD(Eigenlayer)



Source: Dune Analytics (@hashkey\_cloud)

Ether.fi now supports all kinds of restaking assets including BTC, ETH, and stablecoins. When EigenLayer airdropped, they quickly found other sources of incentives - by partnering with Symbiotic, Karak, Ethena and Lombard, they enabled users to farm by asset they want to hold and earn points of multiple protocols.

## ETH LRT Protocols TVL(YTD)

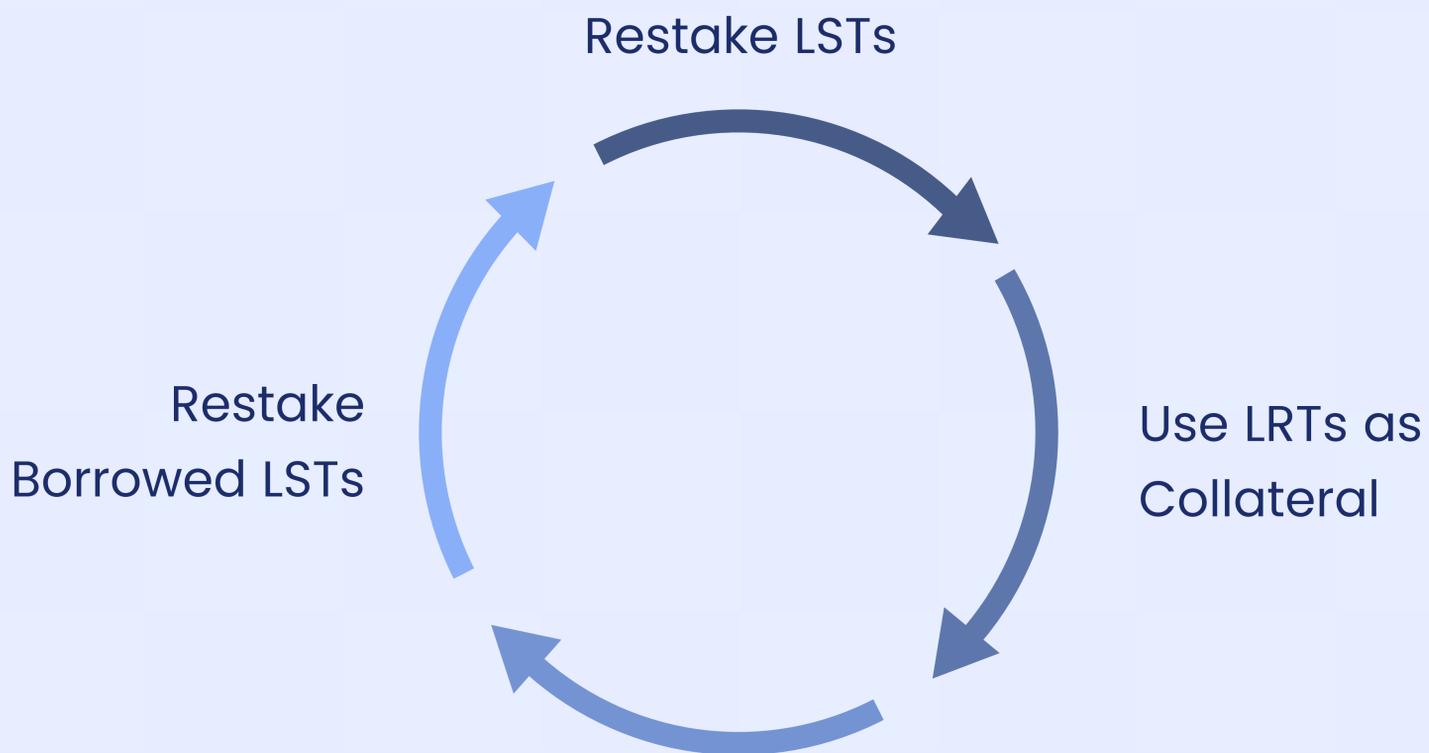


*\*For Multi-Assets protocols like ether.fi, we only calculate the ETH derivatives here to avoid double-counting. That methodology also stands for other asset-based LRT protocols.*

Despite ether.fi bucking the trend, some protocols experienced over ~50% reductions in TVL after the \$EIGEN and their native token airdrop. This may be because yield farmers no longer have high expectations for restaking. Also, compared to protocols like Ethena and Usual that have greater than 20% PT APY on Pendle, Restaking, which has an unclear return, struggles to compete after losing airdrop expectations.

LRT is a winner-takes-all sector: the higher your TVL, the better your LRT's liquidity is. When LRTs are used as collateral in lending protocols, they are usually following a looping strategy.

## LST Looping Cycle



- **Restaking ETH / LSTs and receiving LRTs, such as weETH or ezETH.**

- a. Using these LRTs as collateral to borrow LSTs.
- b. Restaking the borrowed LSTs to mint additional LRTs, creating a loop.

In the context of the LRT looping strategy, a price deviation of 1% to 2% can trigger liquidation. Therefore, maintaining strong liquidity is essential to minimize price volatility, particularly during significant market exits.

## LRT Market Risk Overview

LRT	2% Slippage	10% Slippage	Market Cap
 weETH	\$35.2M	\$78.4M	\$8.7B
 rsETH	\$14.4M	\$20M	\$1.7B
 ezETH	\$12.6M	\$16.8M	\$1.6B
 pufETH	\$2.9M	\$4.2M	\$554.7B
 rswETH	\$6.9M	\$7.7M	\$269.6B

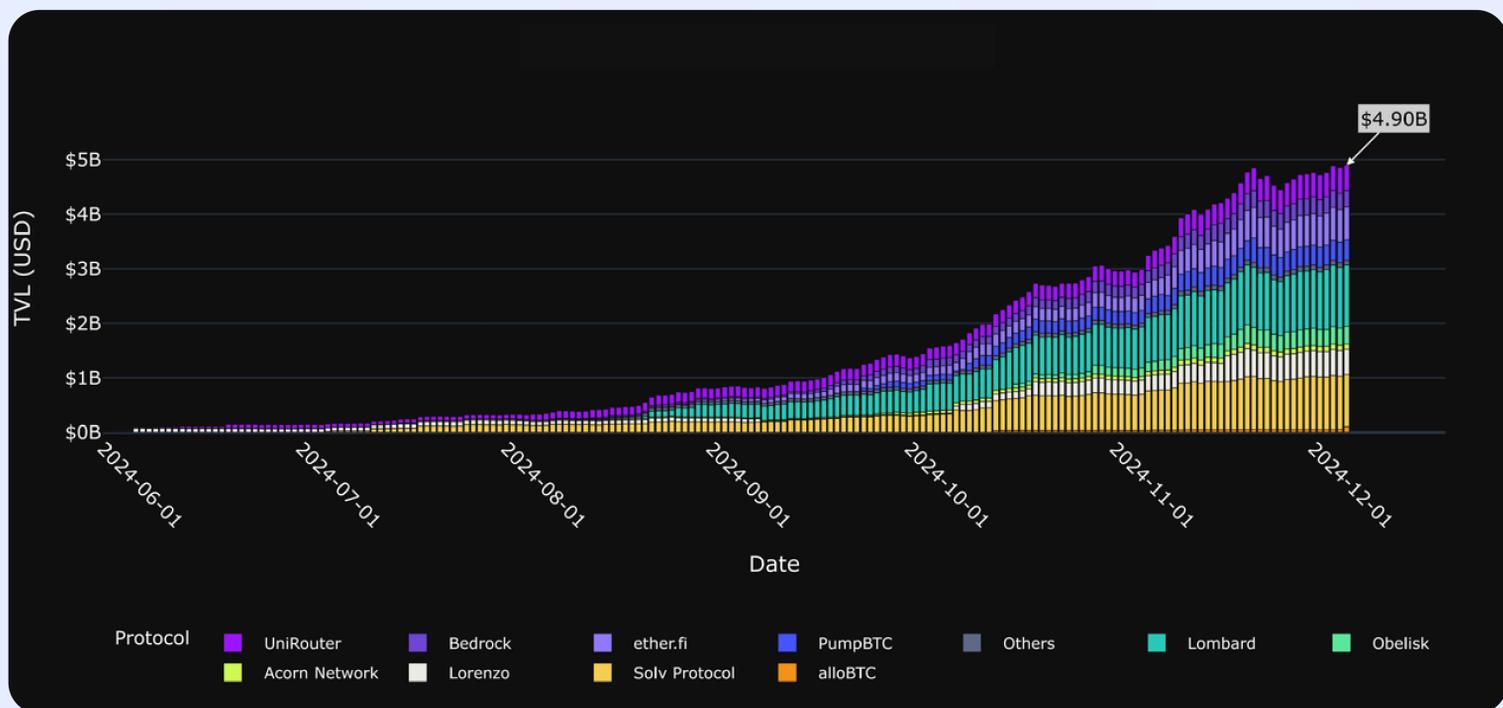
Source: Gauntlet

According to Gauntlet's EigenLayer LRT Risk Dashboard, exit amounts that generated 2% and 10% slippage for weETH were far greater than other protocols. The top three liquidity providers account for merely 21% of the total liquidity, significantly lower than that of other protocols. This limited concentration of liquidity effectively mitigates the risk of cascading liquidations during volatile market conditions.

For ETH LRT protocols, identifying new yield opportunities and narratives is crucial for sustained growth. Several protocols are actively expanding their supported asset types: Swell has launched swBTC for Symbiotic, while

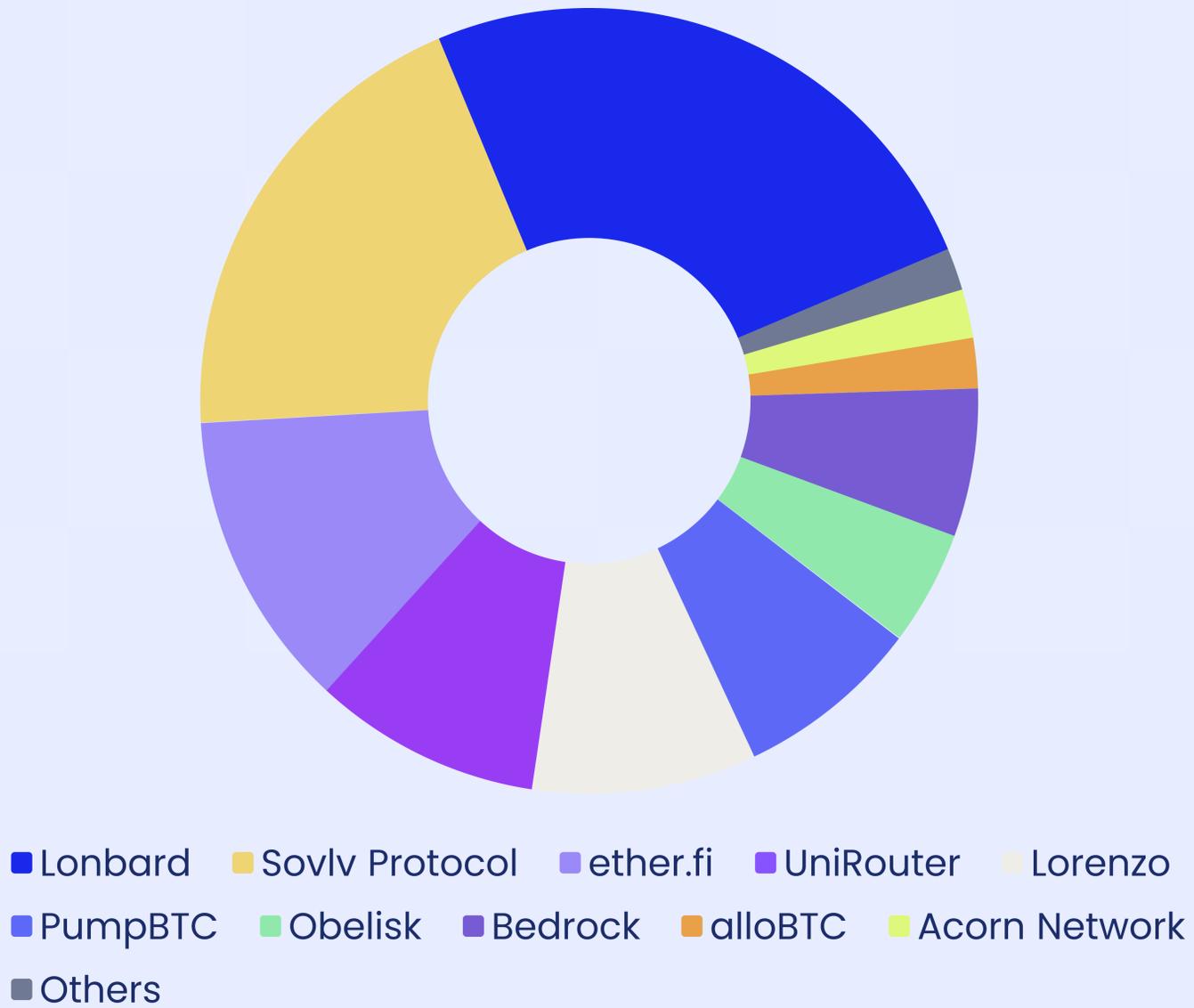
Renzo introduced ezSOL for Jito (Re)Staking. Additionally, some protocols are diversifying their business models; for example, Puffer has launched UniFi AVS for their base rollup. In a sector that doesn't attract as much attention anymore, utilizing token incentives to attract new users and retaining them through consistent revenue will be the key to building a moat.

## BTC LRT Protocols TVL(YTD)



As of writing, BTC LRT protocols have experienced significant growth, reaching a total size of approximately \$4.9B. Restaked BTC now counts approximately 0.25% of the total BTC supply.

## BTC LST Protocols Market Share



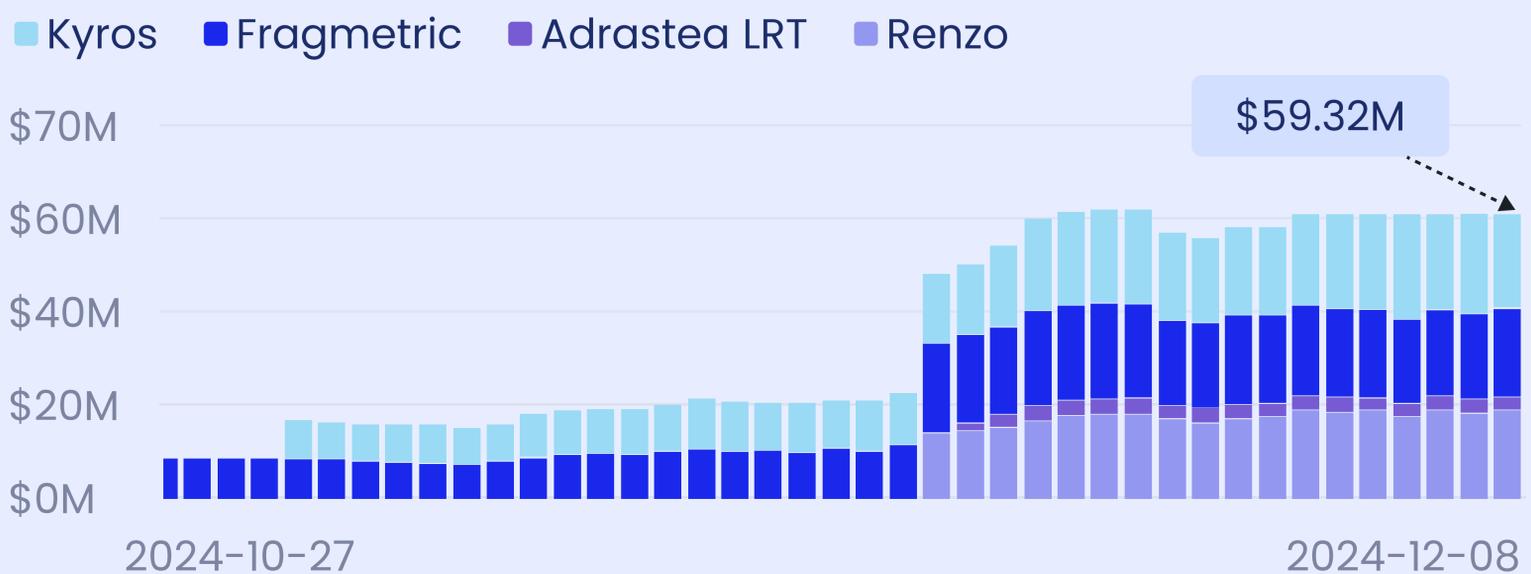
Among the key players in this space, Lombard and Solv Protocol stand out, holding market shares of 23.03% and 19.60%, respectively. They represent two strategies: ETH or multi-chain. Most of the BTC LRT is minted on ETH, while the rest is on BNB and BTC L2s. With cbBTC supply surging, Solv Protocol and PumpBTC have also added support for base.



maturity (Dec. 26) as we write this, the sENA pool with the same maturity date has already seen around \$1.56B in volume at the same time. Interestingly, Solv Protocol (so-called on-chain MicroStrategy)'s upcoming TGE attracted lots of speculators for YT SolvBTC.BBN (Corn), and the volume of trades pumped 1,581% to \$112.06M on Dec. 8.

BTC Whales prefer to HODL their coins, as they are concerned about the risk of losing principal. Ether.fi has been battle-tested with weETH thus it is likely to be trusted by them. For whales with higher risk tolerance, BTC LRTs PT is still a good yield opportunity. Measured in BTC, composite pools of BTC LRTs and corn have APY of 7% to 12%, while separate BTC LRTs pools have APY range from 4% to 8%.

## SOL LRT Protocols TVL(YTD)



Source: Dune Analytics (@hashkey\_cloud)

*\*We did not consider Solayer derived AVS SPL tokens as LRTs here.*

As Solayer and Jito jump into the Restaking rabbit hole, LRTs using them as underlying protocols have emerged on Solana. TVL of the SOL LRT protocols is valued at \$59.32M, with \$50M coming from Jito Restaking (cap) and the remainder from SoLayer.

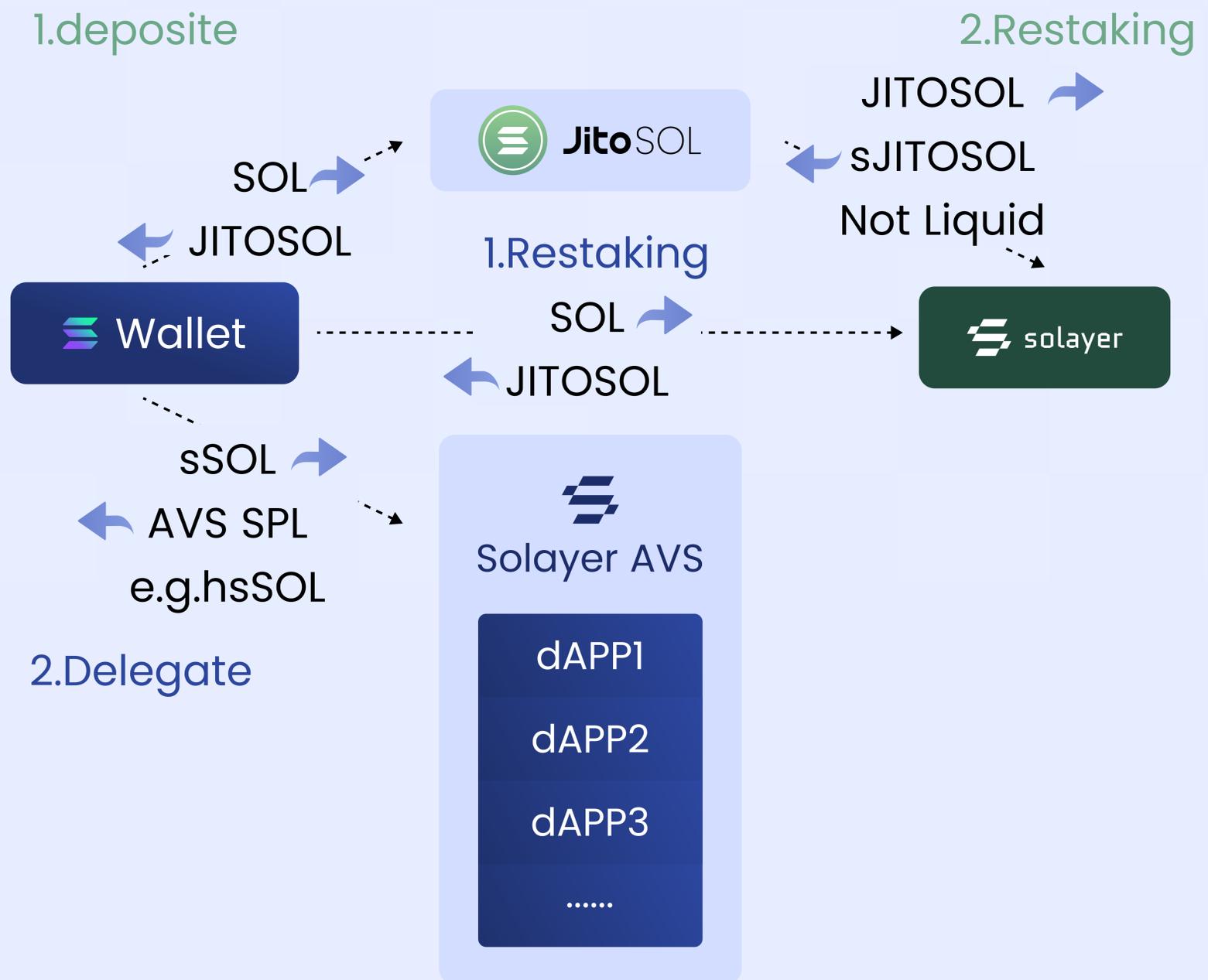
### LRTs on solana

	Kyros	Renzo	Fragmetric	Adrastea
Symbol	kySOL	ezSOL	fragSOL	lrtsSOL
LRT Type	Single	Single	Basket	Single
Rate	1 JitoSOL = 1 kySOL	1 JitoSOL = 1 ezSOL	Varies by asset	1 sSOL = 1 lrtsSOL
Restaking Protocol	Jito (Re)staking	Jito (Re)staking	Jito (Re)staking	Solayer
Reward Type	Reward-Bearing	Reward-Bearing	Reward-Bearing	Reward-Bearing
Deposit Assets	SOL, JitoSOL	SOL, JitoSOL	SOL, JitoSOL, mSOL, BNSOL	SOL, sSOL
Withdrawal	2~4 days	2~4 days	N/A	2~4 days
Kamino Finance APY	5.7%: 5.66% JTO, 0.04% 7d fees	6.44%: 4.01% JTO, 2.33% REZ, 0.11% 7d fees	N/A	N/A
Liquidity	\$ 4.11M	\$ 5.94M	N/A	\$ 9.8K
Fee	0.2% withdrawal fee	0.1% withdrawal fee	N/A	0% withdrawal fee

Currently, all LRTs except fragSOL only accept native SOL and a single type of SOL derivative, rather than accepting a basket of LSTs. Most of them required to wait 1 epoch to 2 epochs for withdrawal.

Adrastea sets itself apart from other Jito-based protocols by positioning itself as a Solayer AVS router. In Solayer, when users deposit SOL or LSTs (e.g. JITOSOL), these assets are automatically converted into sSOL or sJITOSOL. Native restaking users can delegate their sSOL to endogenous AVSs (e-AVSs) for additional rewards while contributing to the security of swQoS. Following the delegation process, users receive an AVS SPL token. For example, if an sSOL holder delegates to HashKey Cloud, they will get a receipt token hsSOL.

## Solayer Restaking



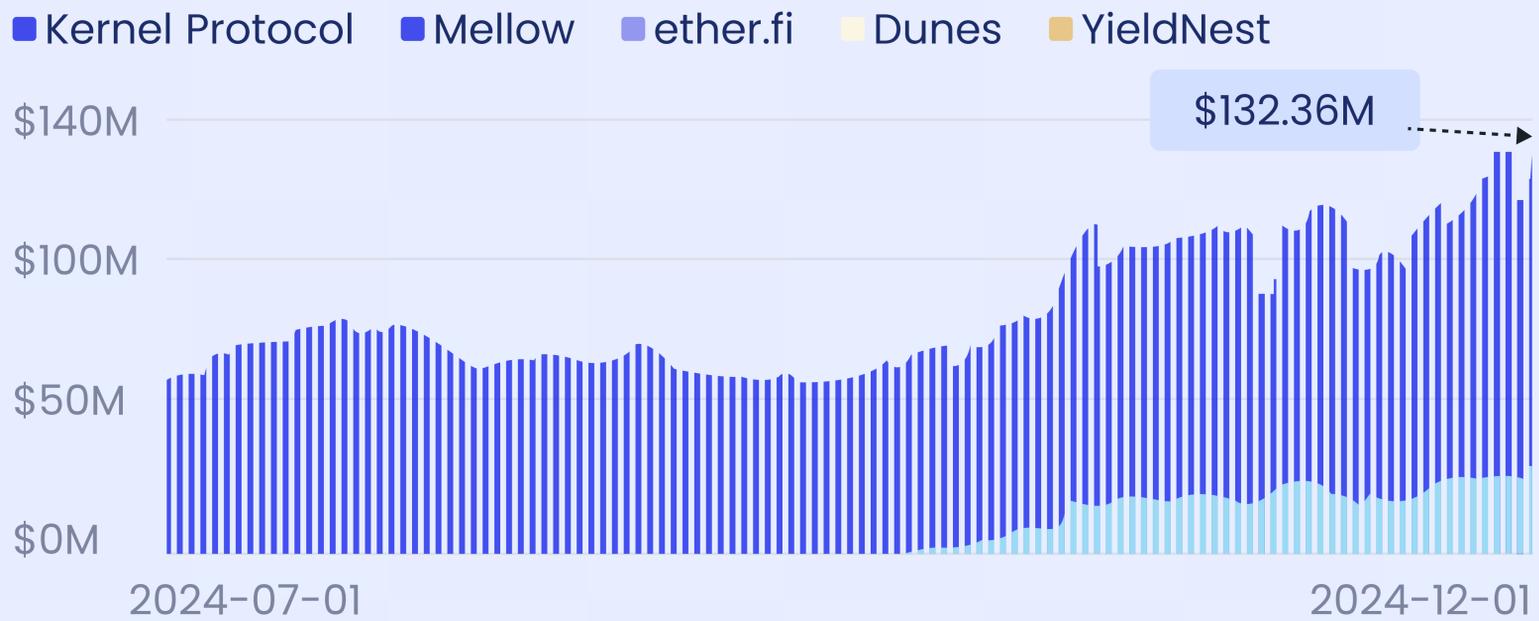
Adrastea helps users in selecting different AVS and optimize rewards. They are developing an automated routing engine to direct liquidity to the most effective AVS. Currently, Sonic AVS is manually chosen as their initial partner. On Solayer, we also observe LRTs issued by institutions and CEX, such as Phoenix's phxSOL and Bitget's BGSOL. These tokens streamline the liquid restaking process by aggregating restaking and delegating in a single step.

Another interesting thing is that both Jito and Solayer have introduced restaking-backed stablecoins. Solayer issued a T-bill rebasing stablecoin sUSD with a 4% ~ 5% yield, that can be further delegated to AVSs for node validation yield. Renzo has partnered with Circle and Jito to launch ezUSDC, a LRT for node validation yield while maintaining the security of Jito's Node Consensus Networks (AVS aliases).

Although both of them use USDC as the deposit asset, sUSD is a yield-bearing stablecoin, while ezUSDC does not. Gauntlet's study mentions that accepting yield-bearing stablecoins as AVSs collateral can reduce collateralization costs but expose them to potential value drawdowns from wrapped yield risks. In contrast, using naive stablecoins as collateral relies on the additional revenue opportunity from LRT. In that case, the AVS risk-adjusted yield plus the LRT risk-adjusted yield must be greater than the base rate for the collateral.

Another reason for using stablecoin LRTs on Solana is that the SOL price is much more volatile than BTC and ETH. According to Messari, the 1-year volatility (Avg. daily price movement of the asset over the last year) on Dec. 2 is as follows: BTC at 0.52, ETH at 0.64, and SOL at 0.85. A proper ratio of stablecoins to other assets ensures safety when the market swings, i.e. the underlying economic security will not suddenly decrease too much.

## Other LRT Protocols TVL(YTD)



Despite BTC, ETH, and SOL, LRT also expands to other assets including ENA, EIGEN, sUSDE, BNB, and a bunch of stablecoins. LRT protocols that support these assets are essentially DeFi protocols. Mellow is a Meta-LRT protocol that allows institutions to create their own LRT vault. Vault managers can choose between different assets and restaking protocols.

Mellow' sUSDE and ENA LRT vault that deposit to Symbiotic counts \$104M with 78% share. The second largest player is ether.fi with \$27M TVL. They've also partnered with Ethena to allow users to deposit various stablecoins, which only take 6% of the TVL within that category. Unlike Mellow, they chose to deposit into EigenLayer instead of Symbiotic. The remaining \$25.38M of TVL came from EIGEN deposited into EigenLayer.

In addition, we can also look forward to Kernel DAO's restaking protocol on BNB. They have been battle-tested by Kelp DAO, an LRT protocol with \$1.6B TVL on Ethereum.

## **Our Achievements**

Due to our early collaboration with EigenLayer, HashKey Cloud has established a robust foundation that facilitates the swift expansion of our partnerships with other key protocols. In addition to Eigenlayer, we are actively collaborating with protocols such as Utonic, Cygnus, Karak, Exocore, and Solayer, across both mainnet and testnet. These strategic partnerships not only enhance our technical expertise but also underscore our significant influence and proactive engagement in the restaking era.

From the early stages of the LRT protocol's testnet phase, HashKey Cloud has been actively involved, leveraging our extensive expertise and collaborating closely with LRT protocols. HashKey Cloud is one of the first node operators to run ETH validators and the AVS validation services for LRT protocols, including Eitherfi, Puffer Finance, Renzo, Rio NetWork, and Swell. We enabled secure and stable node validation service for our partners and the end users. While providing restaking node operator service, we tailored selective AVS strategy to secure the best risk/reward restaking strategy.

This year, we launched a new restaking dashboard to provide a comprehensive overview of key metrics related to the EigenLayer ecosystem and HashKey Cloud.

## Season2 EigenLayer Restaking APR

# 6.38%

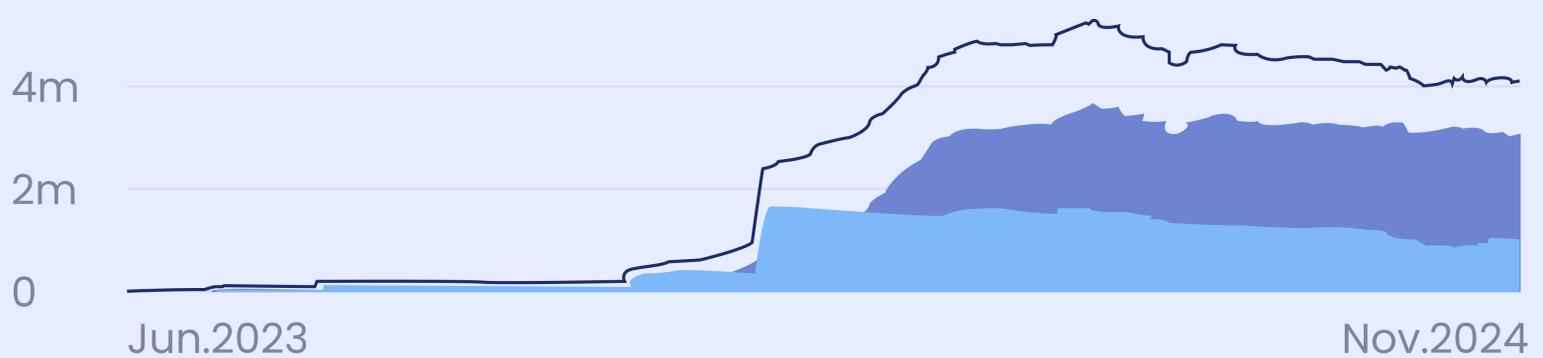
EigenLayer(Restaking APR)

Source: Dune Analytics (@yandhii)

Users can review the latest APR for EigenLayer restaking and \$EIGEN airdrop summaries.

## EigenLayer TVL(Daily)

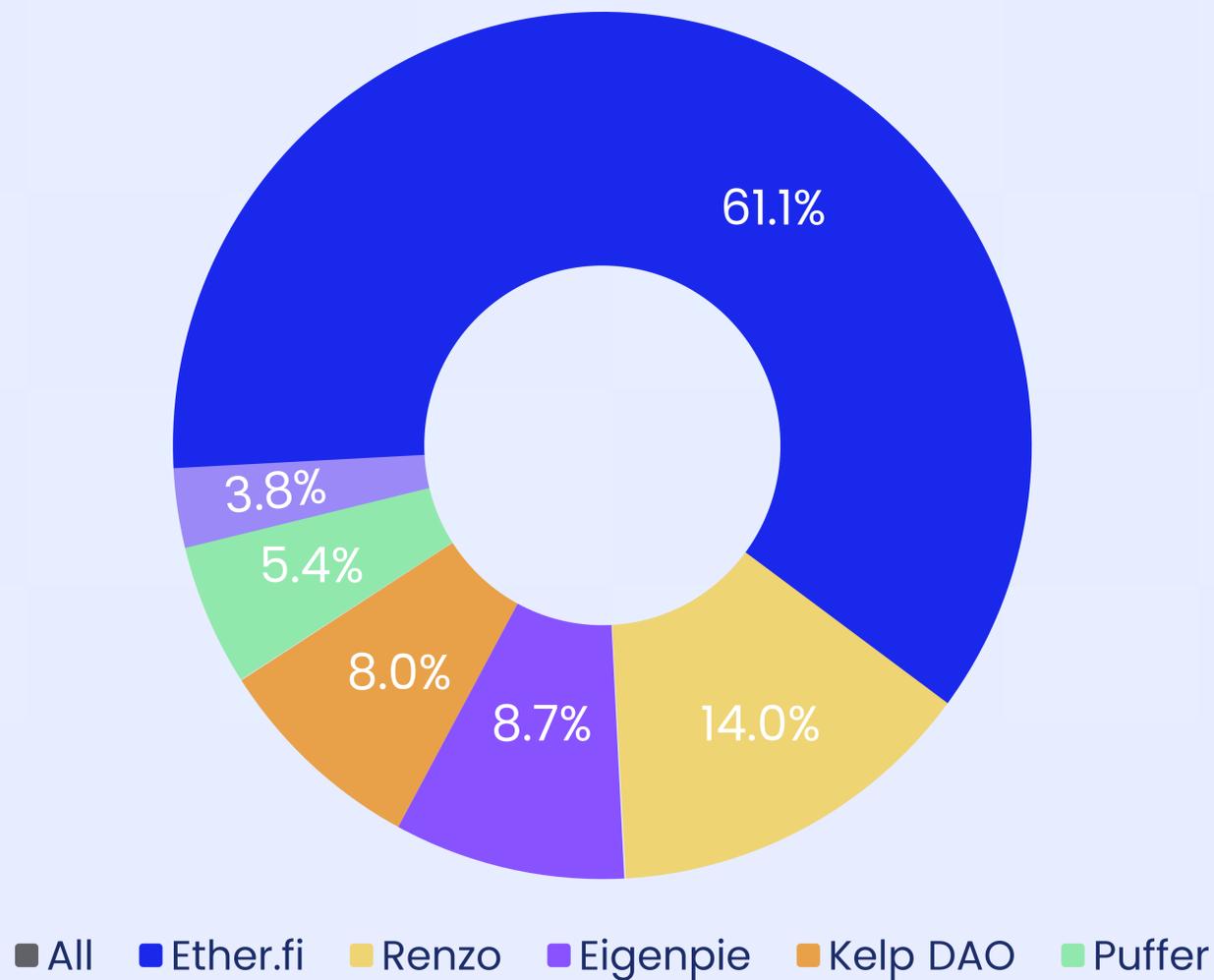
■ All ■ Total ■ Liquid Restaking ■ Native Restaking



Source: Dune Analytics (@yandhii)

The dashboard offers insights into EigenLayer's TVL and restaking activities, breaking down TVL by liquid and native restaking.

## Delegated LSD & ETH by LRT Protocols



Source: Dune Analytics (@yandhii)

It also covers a detailed analysis of these two kinds of restaking methods and categorizes EigenLayer operators by LRT (Liquid Restaking Token) protocols and their dominance in the ecosystem.

## HashKey Cloud Delegated LSD & ETH

**93,995**

ETH

Source: Dune Analytics (@yandhii)

Additionally, HashKey Cloud metrics are tracked by interval, showing its growth and performance trends over time. This dashboard provides valuable insights for informed decision-making and ecosystem analysis.

## Looking into the Futures

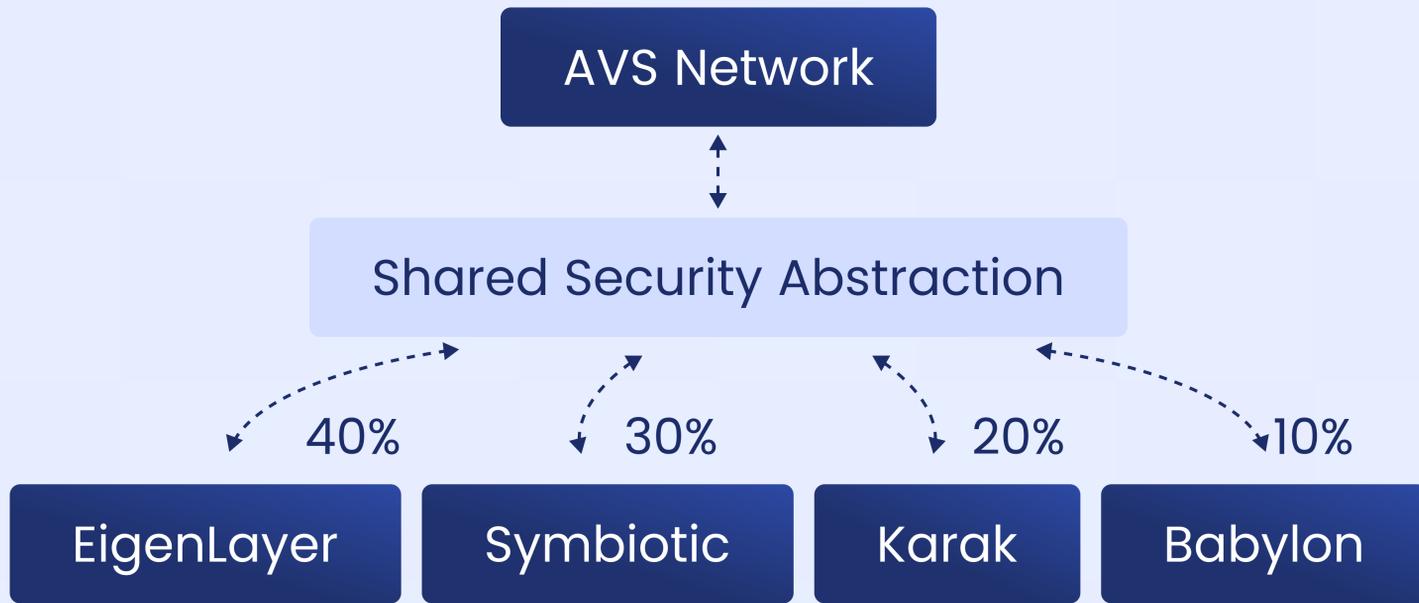
Restaking started with EigenLayer on ETH, which initially only allowed users to restake ETH and LSTs. Symbiotic introduced the new ERC-20 asset restaking, and Karak pioneered EVM multi-chain restaking, which allows users to restake LRT.

Furthermore, restaking is not just a game within the ETH ecosystem. There are now more than 10 restaking protocols that use different types of assets to provide economic security: Kernel (BNB); Jito, Cambrian, Solayer (SOL), Satlayer, Pell Network (BTC), etc. Picasso is another interesting case that connects SOL<>IBC and restaked SOL to provide shared security in the IBC ecosystem.

Restaking has been shown to have multi-assets, multi-chain and multi-ecosystem. So what's next?

As security is isolated in each restaking protocol, we believe they will be abstracted again - just as chain abstraction does. The beauty of this is - developers don't have to buzz over which protocol to build on, but instead take a piece of each protocol.

## Shared Security Protocols



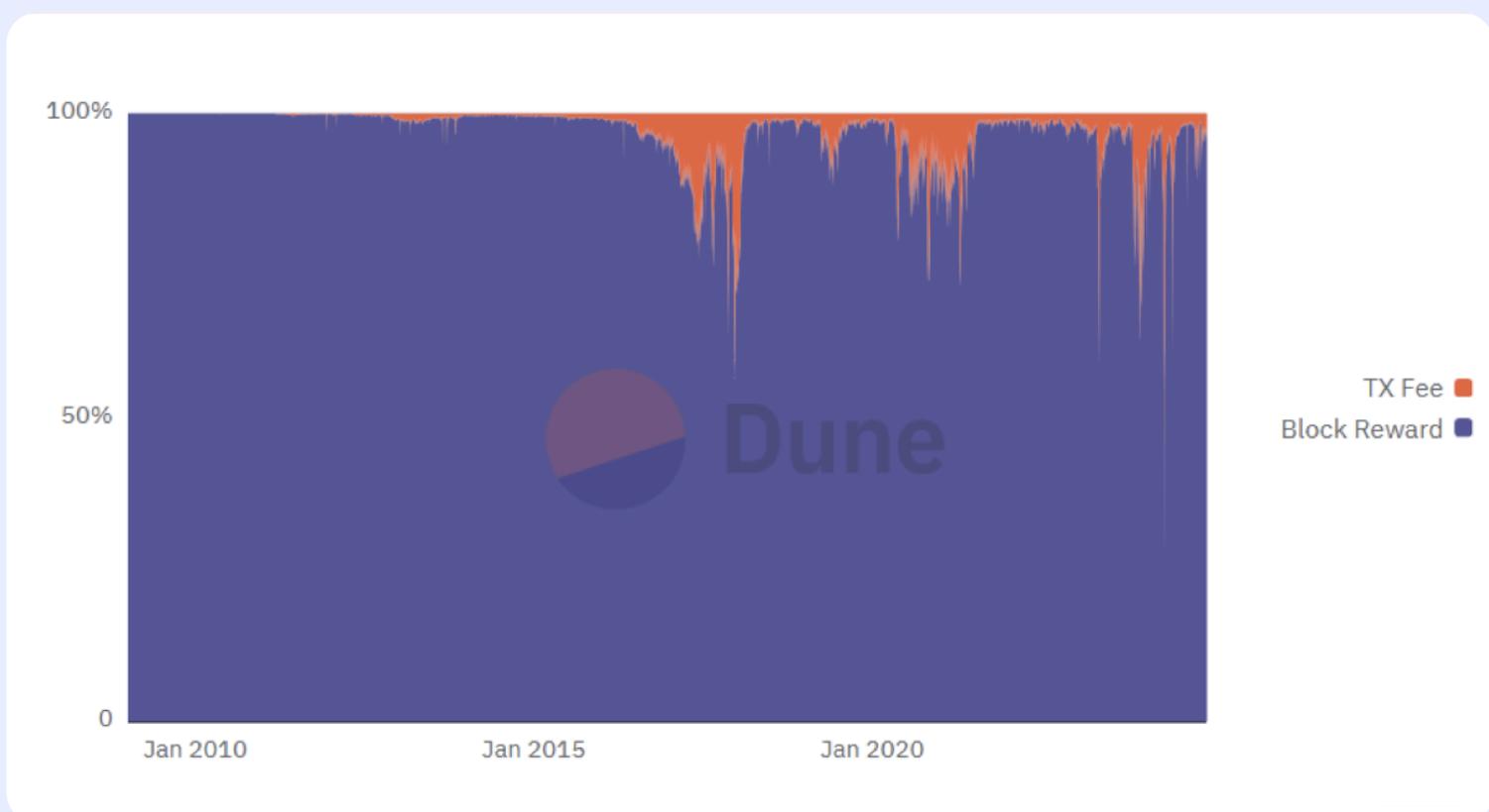
This approach spreads the risk while allowing the project side to get more incentives for multiple restaking protocols. Catalysis is already working on building in this direction.

# Trends on Bitcoin

# Why BTCFi Is Necessary For Miners

Narrowly speaking, BTCFi stands for DeFi for BTC. However, we believe that BTCFi represents a broader ecosystem encompassing all protocols designed to generate yields by BTC. BTCFi's emergence was a necessity from the miners' perspective. As we all know, BTC mining is halved every four years. While miners also collect transaction fees, this represents a very small portion of their income.

## Bitcoin Mining Revenue Distribution: Block Rewards vs Transaction Fees (2010-2024)

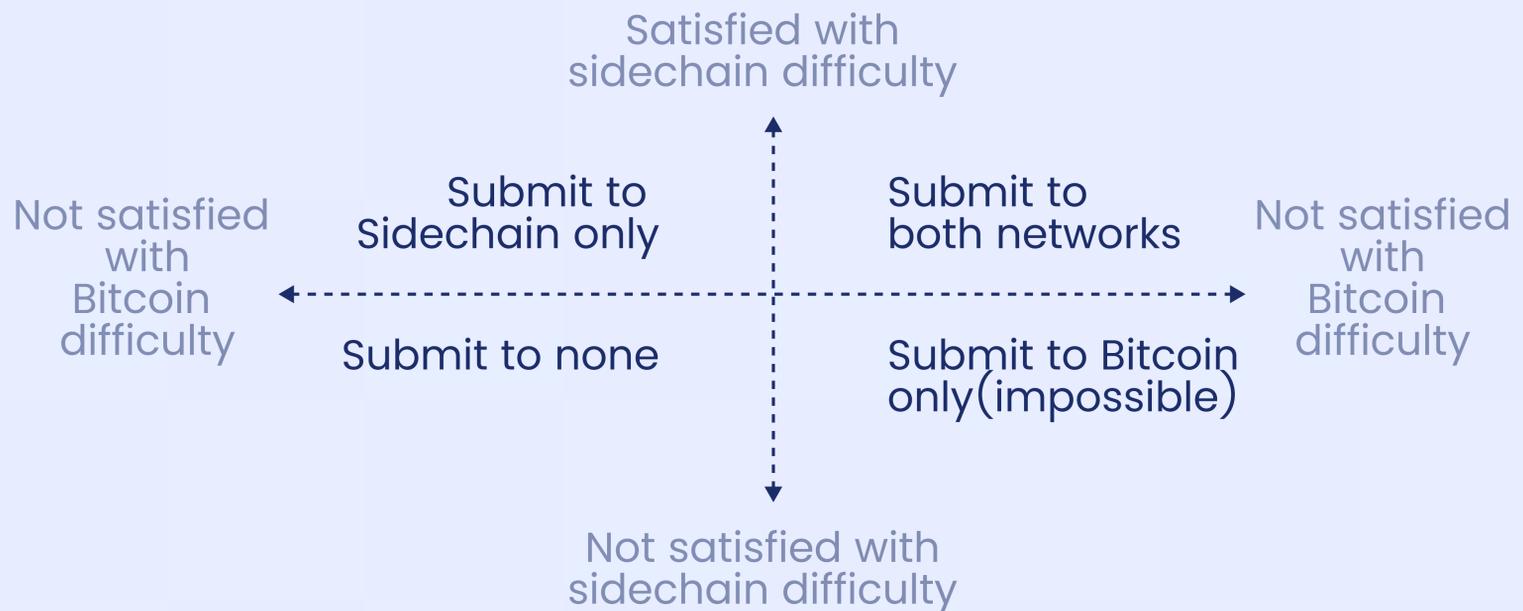


Source: Dune Analytics (@yandhii)

When rewards keep getting fewer and fewer while mining costs remain high, miners will leave if they cannot break even. There is a "death spiral": when the miner number decreases, there is less hashing power in the network, so it's easier to control 51% of the network to double-spend BTC, especially when BTC is on a bull run. Therefore, building BTCFi protocols to give miners more subsidized transaction fees is imperative.

Currently, there are two ways for miners to increase their revenues:

## Merged mining in Bitcoin and Sidechains



Merged mining is the process that allows BTC sidechains to be mined simultaneously with Bitcoin. According to Rootstock, there are three cases of merged mining.

- If a solution satisfies Bitcoin's difficulty, it is submitted to both Bitcoin and Rootstock
- if it only satisfies Rootstock's difficulty, it is submitted solely to Rootstock.
- Solutions meeting only the pool difficulty are discarded and not submitted to any network.

## Blockchain Mining Metrics: Syscoin, Bitcoin, and Core DAO Analysis

	Syscoin	Rootstock	Core DAO	Bitcoin
Type	Merged Mining	Merged Mining	Delegated Proof-of-Work	Proof-of-Work
Hash Rate	303 EH/s	344 EH/s	501 EH/s	776 EH/s
Total Rewards per Block	27.31 SYS	79.2% Tx Fee (RBTC)	CORE rewards dynamically adjusted	-
Total Rewards per Day	15,730.56 SYS \$2,570 (SYS price: \$0.1634)	Avg. : \$0.03 ~\$300 (RBTC price: \$10K)	CORE rewards dynamically adjusted by hashrate distribution	-

Source: DeFiLlama, CoinMarketCap, blockchain.com, Rootstock, Core, Syscoin API

Core DAO uses Satoshi Plus, a consensus algorithm that mixes Delegated Proof of Work (DPoW) and Delegated Proof of Stake (DPoS). Miners can add metadata in the op\_return field of their mined Bitcoin blocks, and then let Core Chain inherit their hashing power to elect validators. As a reward for doing so, they are incentivized by CORE tokens.

Foundry, the famous mining pool, accounts for 40.82% of the hash power delegated to Core. However as validators are selected to produce blocks in a round-robin manner, their basic reward expectations are similar. Thus, the yield of miners that delegate to Foundry instead is less than other validators.

Other cool stuff like BTC wrappers, LRTs, L2s, and DeFi protocols (DEX, Lending, Stablecoin) focus on unlocking liquidity and improving capital efficiency. Most of them are still in the early stages: Babylon doesn't offer shared security to other appchains yet; LRT protocols and L2s are mainly using custodians and MPC to manage funds. Yet we can see BitVMX and BitcoinOS announcing that they both optimistically verified a validity proof on the mainnet according to Bitcoin Layers. We'll probably see something different later on, still bullish.

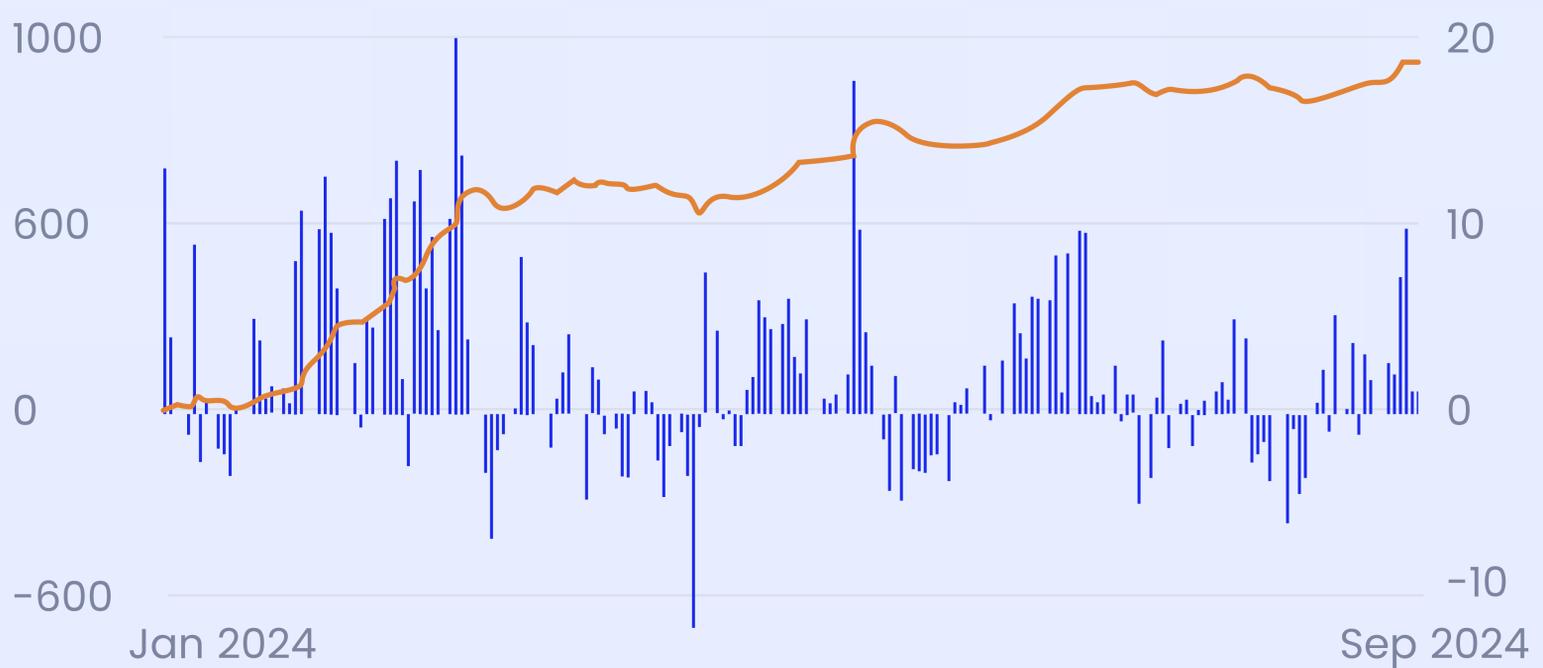
## **New Choice of BTC Holdings**

A BTC ETF, or Bitcoin Exchange-Traded Fund, is an investment vehicle that tracks the price of Bitcoin but is traded on traditional stock exchanges. This allows investors to gain exposure to Bitcoin without the complexities of purchasing or storing the actual cryptocurrency. By providing a regulated investment

option, they can attract both institutional and retail investors, thereby increasing market liquidity and potentially driving up the price of Bitcoin.

## US Spot BTC ETF Flows

■ Daily Flows   ■ Cumulative Flows



Source: Dune Analytics (@hashkey\_cloud)

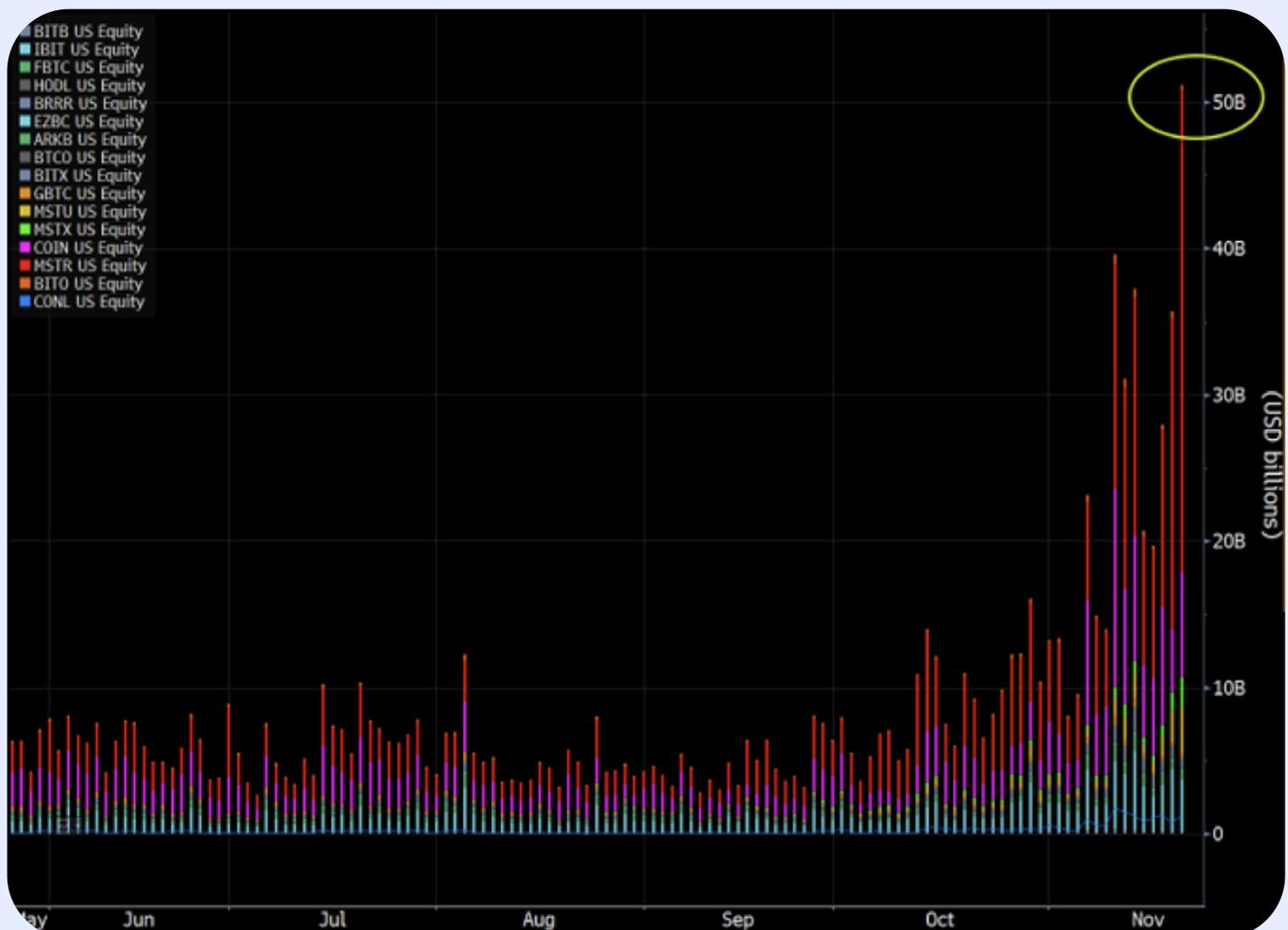
There has been notable institutional adoption of BTC ETFs. For instance, Emory University's endowment fund has invested over \$15M in a Bitcoin ETF, and the Michigan Retirement System has also made substantial investments. This trend indicates that BTC ETFs are gaining traction in the institutional market.

With over 1,200 institutions holding Bitcoin ETFs, the adoption rate far exceeds that of early gold ETFs, which had only 95 institutional investors in their first year. This suggests that Bitcoin ETFs are becoming increasingly mainstream. Non-institutional investors account for 80% of the demand for BTC ETFs, while institutional holdings

have increased by 30% since the first quarter. Investment advisors have seen the most significant growth in holdings, increasing by 44.2% to 71.8K BTC, indicating professional confidence in Bitcoin as an investment.

By Nov. 21, the Bitcoin Industrial Complex crushed their record with \$50B in volume. This figure is equivalent to the average daily trading volume of the entire U.K. stock market. Of that, MSTR contributed \$32B, while MSTU and MSTX (MSTR's two leveraged ETFs) combined for \$6B, more than the total volume of all spot bitcoin ETFs.

## The Bitcoin Industrial Complex crushed their record in Nov. 21 with \$50B in volume.



Source: Bloomberg Intelligence

BTC ETFs currently account for an average of 26.4% of BTC spot trading volume, with peaks reaching up to 62.6%. This suggests they are significantly impacting the market, driving secondary effects such as increased Bitcoin dominance, improved market efficiency, and reduced volatility.

The global expansion of crypto ETF products is evident, with strong demand reflected in the CoinShares report of 9.01B in weekly flows and 270B year-to-date. This indicates a growing interest in crypto assets.

Based on the above analysis, we can conclude that BTC ETFs have played a pivotal role in the adoption and development of Bitcoin, making it accessible to a wider audience and contributing to the overall stability and maturity of the market. As the regulatory environment continues to evolve, BTC ETFs will likely continue to be a key player in the cryptocurrency investment space.

## Net Asset & BTC Price correlation



# Risk & Challenge

# Global Regulatory Environment and Compliance

The cryptocurrency market in 2024 faces a complex regulatory environment, with diverse approaches across regions. The European Union's comprehensive Markets in Crypto-Assets Regulation (MiCA) contrasts with restrictive policies in countries like China and India. This diversity requires companies to adapt strategies for different markets while maintaining consistent operational standards, often involving significant investment in compliance infrastructure and regional expertise.

Meanwhile, the United States remains pivotal in shaping global cryptocurrency regulation, with ongoing policy evolutions from key agencies like the SEC. Market participants should monitor emerging frameworks for cryptocurrency classification, changes in regulatory agency leadership, new guidelines for institutional participation, and updates to consumer protection measures.

Building on the diverse regulatory landscape, we should focus on emerging trends and key challenges in the AML landscape. Growing cooperation between international

regulatory bodies, the movement toward standardized compliance requirements, the integration of traditional financial system controls, and the development of technology-driven compliance solutions are enhancing the ability to comply with regulatory requirements. Key challenges include enhanced VASP obligations for KYC procedures, increased reporting requirements for suspicious activities, growing complexity in cross-border transaction monitoring, and higher operational costs for maintaining compliance systems. Thus market participants might pay more attention to the following strategic considerations:

- **Market Entry and Expansion**

Prioritize markets with clear regulatory frameworks, build strong relationships with local regulators, develop flexible operational models, and invest in compliance expertise and infrastructure.

- **Long-term Planning**

Participate in regulatory discussions and industry groups, maintain adaptable compliance systems, build strategic partnerships with established financial institutions, and invest in regulatory technology solutions.

# Market Stability and Institutional Participation

The convergence of traditional financial systems with the crypto market presents challenges and opportunities. Developing interoperable platforms, adopting standardized protocols, and implementing stricter AML regulations are essential for seamless integration. Despite challenges, the integration offers opportunities for enhanced financial services and broader market access. Thus institutional investors face the dual challenge of embracing innovation while managing risks associated with crypto investments. Adopting new technologies like blockchain-based solutions requires rigorous risk assessment and due diligence. Balancing innovation and risk management is essential for sustainable growth and success in the evolving market landscape.

# Geopolitical and International Competition

Crypto mining, particularly for proof-of-work blockchains like Bitcoin, is a pivotal aspect of blockchain networks. Regulatory changes have led to a shift in power dynamics, with countries such as the United States, Russia, and European nations emerging as significant players. This redistribution alters the geopolitical landscape, influencing technical aspects and regulatory environments.

Also, the race to become a global hub for crypto businesses and innovation is intensifying. Jurisdictions with favorable regulations, such as Singapore, Switzerland, and the United States, are attracting companies and talent. Businesses must navigate highly contested environments while expanding operations in markets with supportive policies.

On the other hand, national policies on crypto vary widely, creating barriers or opportunities for companies looking to expand internationally. Standardized frameworks could streamline operations, reduce compliance costs, and foster a more predictable environment for businesses. Initiatives like the Financial Action Task Force (FATF) are steps toward harmonization, but global cooperation is essential for meaningful progress.

Last but not least, trade tensions, including disputes over taxation, regulatory compliance, and national security, could impact cross-border crypto operations. Businesses must navigate these complexities while capitalizing on emerging opportunities.

## **Long-term Market Structure Concerns**

The convergence of traditional banking and crypto operations is increasingly necessary. However, technological differences, regulatory discrepancies, and potential resistance from established financial institutions pose challenges. Despite these hurdles, the benefits are substantial, offering expanded services and increased accessibility for customers.

The core principle of decentralization in blockchain technology often clashes with regulatory demands for oversight and control. Finding this balance is crucial for maintaining the integrity of decentralized systems while meeting regulatory expectations.

# Future Outlook and Strategic Considerations

Achieving global regulatory standards is crucial for creating a stable and predictable environment for the web3 industry. The company should actively engage in international dialogues and advocate for harmonized regulations.

Meanwhile, building compliant technology infrastructure is essential for maintaining trust and ensuring long-term success. The company should prioritize innovation in this area, developing or integrating technologies that meet evolving compliance needs while supporting scalability and security.

## Strategic Considerations

- **Diversify Markets**

Explore opportunities in regions with favorable regulatory environments.

- **Invest in Compliance Technology**

Develop or adopt technologies that ensure adherence

to regulatory standards.

- **Foster Partnerships**

Collaborate with regulatory bodies, institutions, and industry peers.

- **Stay Agile**

Maintain flexibility in strategy and operations to quickly respond to regulatory changes and market dynamics.

# Reference & Disclaimer

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