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Deep Diving Into ETH Liquid Staking

FULL REPORT

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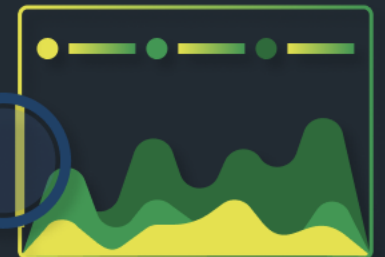
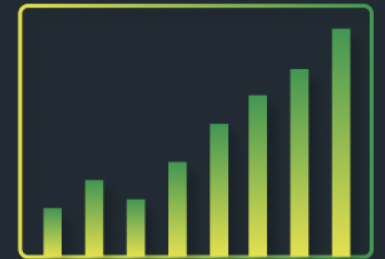
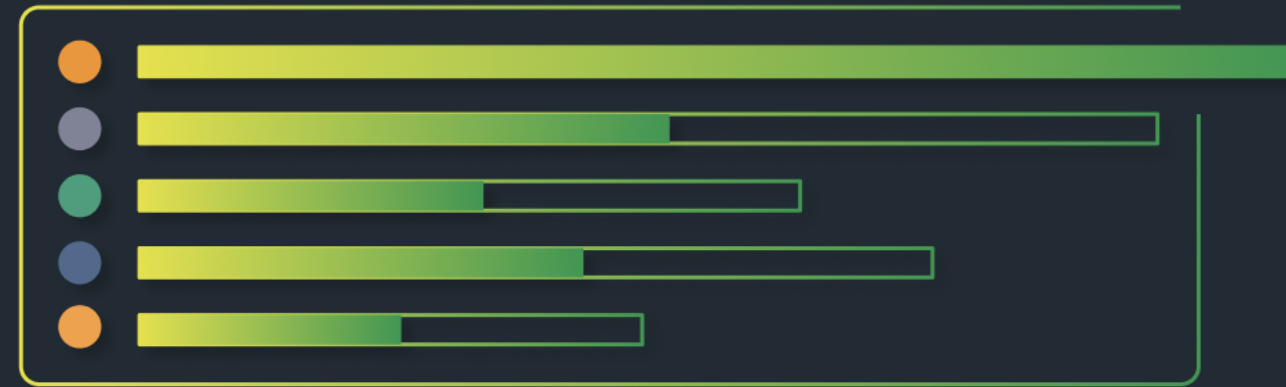


Table of Contents

The Origins of Liquid Staking Derivatives	2	ETH Staking Rewards Distributed Across LSD Protocols	12
Custodial vs Non-Custodial LSDs	3	ETH Staking Fees Earned Across LSD Protocols	13
Distribution of Staking Rewards for LSDs	4	Price Returns of Top 6 Liquid Staking Governance Tokens	14
Timeline of Liquid Staking Derivatives	5	Overview of LSDFi Protocols	15
Comparison of Features Between LSD Protocols	6	Multichain TVL Across Top 10 LSDFi Protocols	16
Total Staked ETH Across LSD Protocols	7	Price Returns of Top 7 LSDFi Governance Tokens	17
Daily Net Flow of ETH from LSD Protocols post-Shapella	8	Market Cap of DeFi & LSD-Backed Stablecoins	18
ETH Validator Queue	9	The Future of LSDs & LSDFi	20
Historical Yield of ETH Liquid Staking Derivatives	10	Lido: Winner Takes Most vs Sacrifice for the Greater Good	21
Price Deviation of Liquid Staking Derivatives against ETH	11	Conclusion & Key Takeaways	22

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The Origins of Liquid Staking Derivatives

With the launch of Ethereum's Beacon chain on Dec 1, 2020, validators could participate in PoS and earn staking rewards. However, the required 32ETH staked was a barrier of entry for smaller users, leading to the creation of pooled staking and LSDs.

What are Liquid Staking Derivatives?

Typically, in conventional crypto staking products, deposits are **locked on a platform** for a specified period and **cannot be used for other purposes**. This used to be the case for **ETH validators at the start**, where they required a significant minimum deposit of 32 ETH, and it was a one-way trip; stakers could not withdraw their assets until they were enabled just recently in April 2023.

However, **liquid staking protocols** allow users to deposit their assets and receive a **tokenized receipt**, representing a claim on their staked assets. These tokenized receipts, commonly known as **liquid staking derivatives, or LSDs**, can then be traded for other assets on exchanges or used as collateral for loans.

Different LSD protocols each operate slightly differently from each other. Some have permissioned node operators while others may be permissionless, and each protocol will have their own rules and SLAs for node operators. Each protocol also has their **own fees and methods of redistributing staking rewards**. This results in LSDs being non-fungible between each other.



While competition between LSDs is still rife, as a category they have become a core primitive in DeFi. A new wave of protocols have begun building and innovating on-top of LSDs, ushering a new category of **LSDFi protocols** into the ecosystem.



With the launch of the **Ethereum beacon chain on December 1, 2020**, users could **stake their ETH** to become validators and **earn inflationary rewards** for securing the network.



To participate as a node operator, users need a **minimum of 32 ETH**. Furthermore, stakers could **not unstake their ETH until withdrawals were enabled**, which only happened in April 2023.



To encourage smaller ETH holders to participate in staking and to unlock liquidity, LSDs such as Lido's stETH and Rocket Pool's rETH took off as a solution to these problems. Not only could users **stake any amount of ETH**, but they would also receive a token that represents their staked ETH, allowing them to use it as collateral or earn additional yield on other DeFi protocols.

Custodial vs Non-Custodial LSDs

Custodial LSDs, offered by centralized parties, simplify the staking process for newcomers, while non-custodial LSDs, which are on-chain protocols, allow users to retain control over their assets.

Custodial LSDs

- Custodial staking services are typically offered by centralized exchanges or entities which stake assets on the network on users' behalf and distribute staking rewards on a regular basis.
- The validator sets are typically centralized and operated by the custodial entity.
- While they started as a pure staking service, some of these custodial services have started issuing LSDs.
- Although centralized platforms make it easier for new users to stake their assets, they are in control of your ETH, and may restrict your ability to redeem your deposits from your LSD.



Non-Custodial LSDs

- Non-custodial LSDs allow users to deposit their assets and earn staking rewards without relying on third-parties.
- Since anyone can become a validator for non-custodial LSDs, it allows for a more diverse set of node operators.
- Users can deposit their assets into a smart contract and immediately receive their LSDs, which can be utilized across various DeFi protocols.
- Since non-custodial LSDs are implemented via smart contracts, users can verify exactly how much rewards they are expected to receive, and that they can redeem their LSDs in return for their funds at any time.



Distribution of Staking Rewards for LSDs

Different LSD protocols also implement different mechanisms for distributing staking rewards, each with their own benefits and drawbacks.

Rebasing Tokens

- For rebase LSDs, rewards are distributed through a daily increase of the token balances of LSD holders.
- The protocol will update the token balances of the LSD holders based on their share of the staking pool and the amount of staking rewards collected. Since the rewards are reflected in the creation of new tokens, rebasing helps to maintain the LSD's price parity with ETH.
- Rebase tokens are often difficult to implement into other protocols. As such, the launch of wrapped stETH allows users to convert stETH into a yield-bearing LSD.



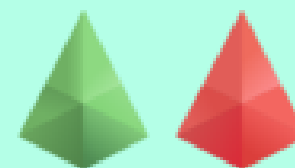
Yield-bearing LSDs

- Yield-bearing LSDs such as rETH and cbETH automatically accrue staking rewards back into the underlying staking pool.
- As such, the redemption value of the yield-bearing LSD increases over time as more staking rewards are accrued.
- For example, holding 1 rETH allows you to redeem 1 ETH plus the staking rewards accrued.
- Yield-bearing LSDs allow users to simply hold and earn staking rewards, without performing additional transactions.



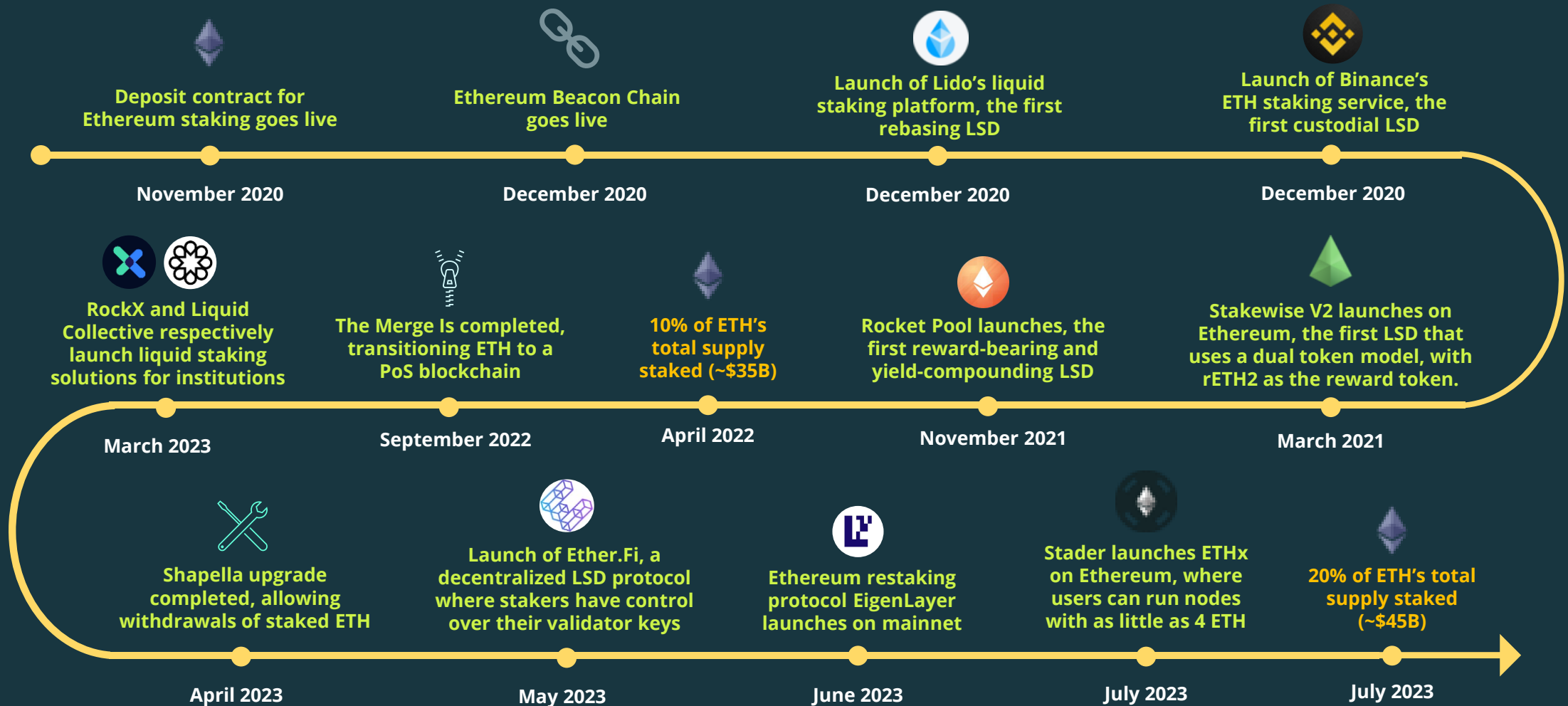
Separate Reward Token

- Instead of denominating rewards in ETH or the base LSD token, staking rewards are distributed through a separate reward token, less any protocol fees.
- For example, StakeWise issues sETH2 at a 1:1 ratio to users' ETH deposits, and rETH2 represents the users' staking rewards, also at a 1:1 ratio.
- By having a separate reward token, it unlocks niche opportunities for speculation on staking yields, allowing users to perform leveraged yield trades.




Timeline Of Liquid Staking Derivatives

From the initial versions of LSDs in 2020 to the rise of LSDFi in 2023, ETH liquid staking has grown into a robust ecosystem of composable products for both crypto natives and institutions.



Comparison of Features Between LSD Protocols

While LSD protocols offer similar staking services, they tend to differ in terms of node operator set, fees, supported networks, and methods for distributing rewards.

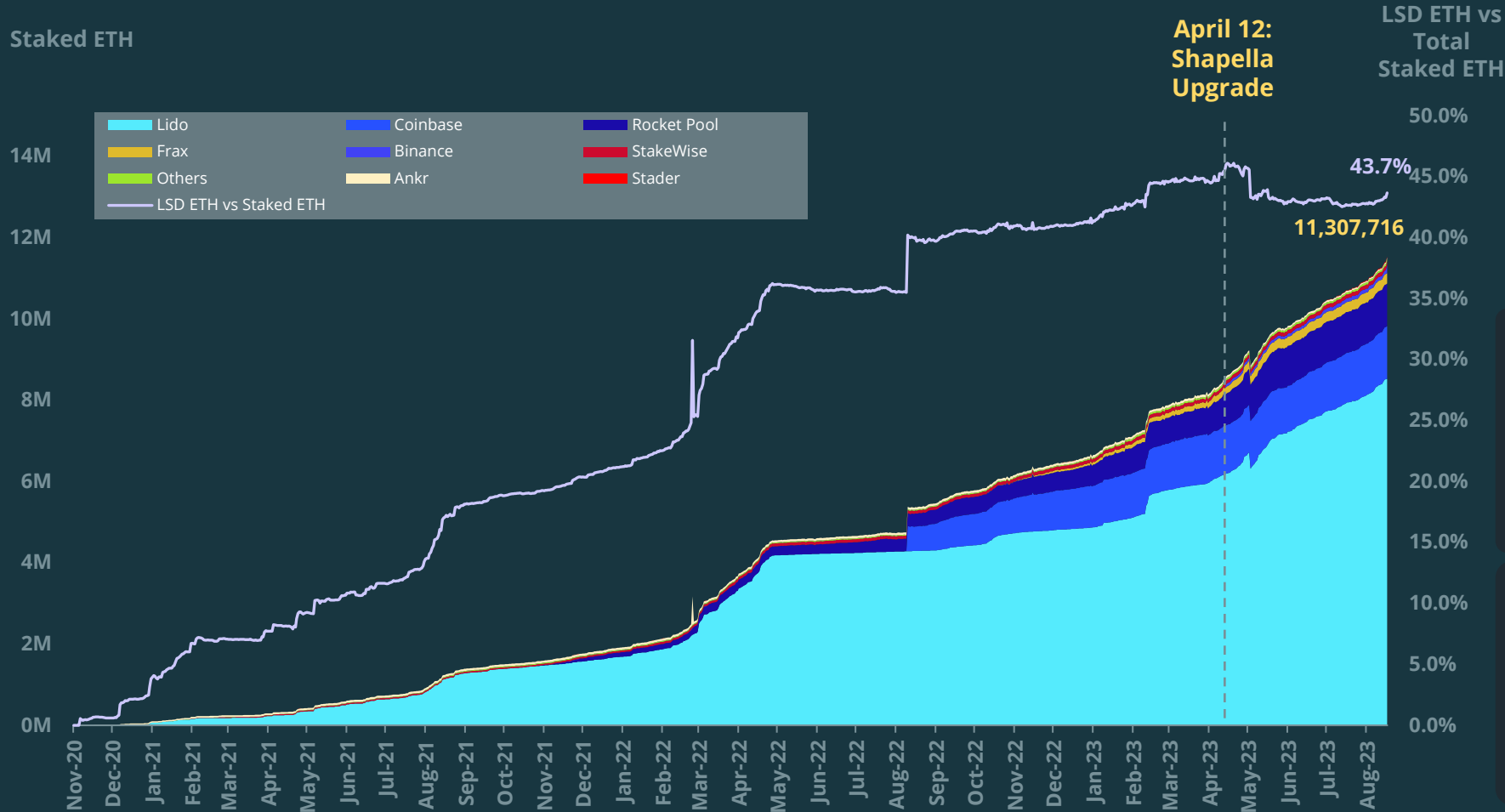
	Custodial/ Non-Custodial	ETH Staking Derivative	Governance Token	Rewards distribution	Supported Staking Networks	No. of Node Operators*	No. of Validators*	ETH Staking Fees
 LIDO	Non-custodial	stETH	LDO	Daily rebase to stETH holders	  	29	~255,000	10% of staking rewards
	Custodial	cbETH	N/A	Staking rewards accrued to underlying ETH pool		1	~77,900	25% of staking rewards
	Non-custodial	rETH	RPL	Staking rewards accrued to underlying ETH pool		2,175	~23,450	14% of staking rewards
 Frax	Non-custodial	sfrxETH	FXS	Additional frxETH is minted and accrued to staking pool		6,314	6,314	10% of staking rewards
 STAKEWISE	Non-custodial	sETH2	SWISE	Distributed as rETH2, which can be redeemed for ETH	 	5	~2,640	10% of staking rewards
	Custodial	BETH	N/A	Daily rebase to BETH holders		2	~39,150	10% of staking rewards
 Stader	Non-custodial	ETHx	SD	Staking rewards accrued to underlying ETH pool	      	132	~510	10% of staking rewards
 ankr	Non-custodial	ankrETH	ANKR	Staking rewards accrued to underlying ETH pool	     	1,000	1,000	10% of staking rewards

Total Staked ETH Across LSD Protocols

By the end of August 2023, total ETH staked across LSD Protocols reached a high of 11.3 million ETH, or 43.7% of the overall 26.4 million ETH staked on the network.

Total ETH Staked in LSD Protocols (Nov 2020 – Aug 2023)

Staked ETH



Total ETH staked in LSD protocols hit **11.3M** by the end of August 2023, ~43.7% of the overall 26.4M ETH staked.

Since the start of ETH staking in November 2020, **Lido has been the dominant LSD protocol**, with 73.4% of all LSD staked ETH, and 32.4% of all staked ETH in August 2023.

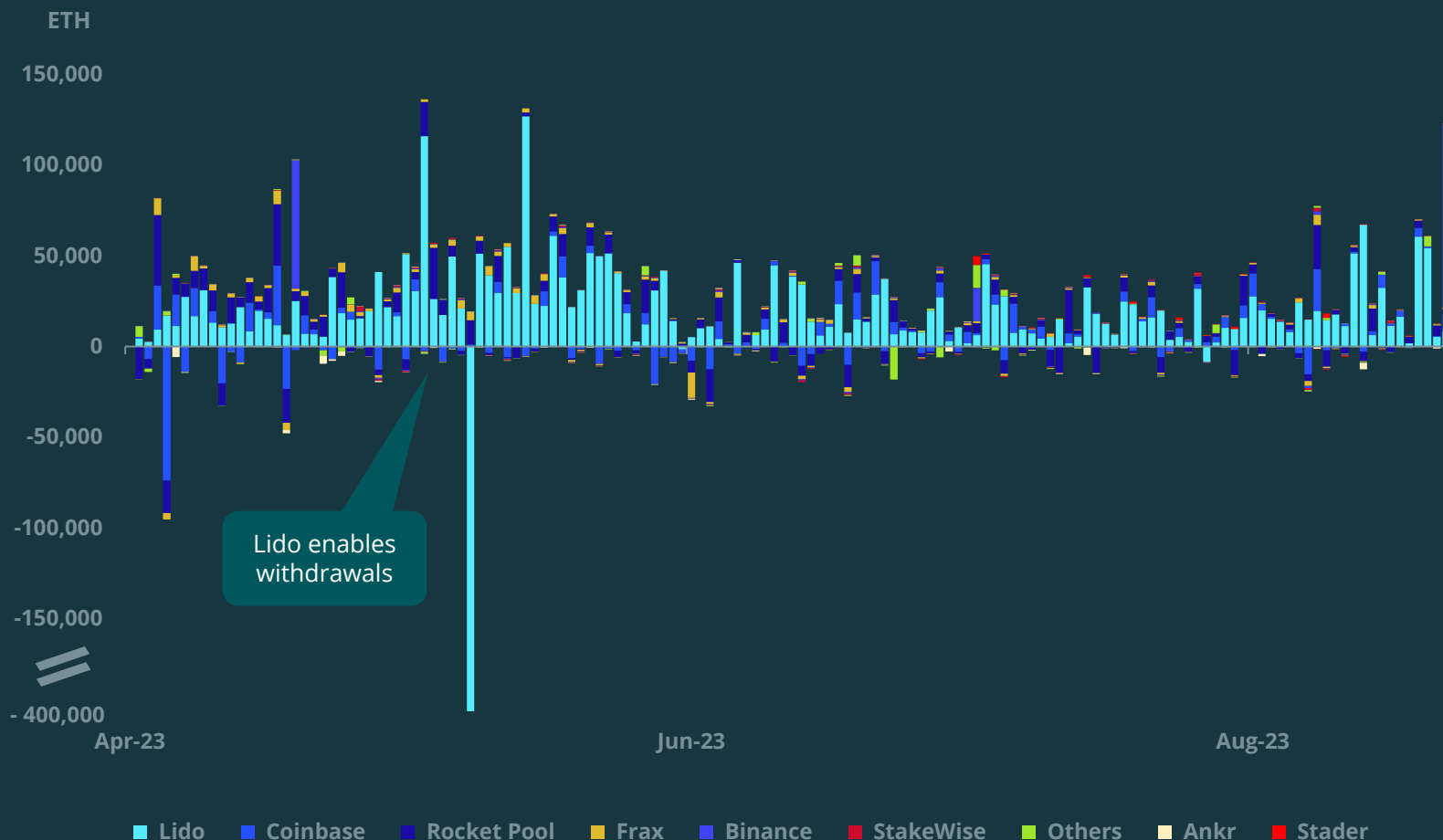
Post-Shapella on April 2023, **LSD staked ETH has climbed 42.9%** or 3.4M ETH.

All LSD protocols gained staked ETH post-Shapella, except for **Ankr**, which **declined by -47.0%**. Meanwhile, **Frax** was the largest gainer by percentage terms, with a **95.4% increase**.

Daily Net Flow of ETH from LSD Protocols post-Shapella

Despite withdrawals being enabled post-Shapella, LSD protocols continued to see consistent inflows, with a peak of 127K ETH deposited on Lido in a single day.

Daily ETH Net Flows into LSD Protocols (Apr 12, 2023 – Aug 31, 2023)



381.2K

Largest total daily net outflow of ETH from LSD protocols

In the first week post-Shapella, LSD protocols as a whole continued to experience net ETH inflows, **despite heavy outflows on several days from the larger players such as Coinbase and Rocket Pool.**

Interestingly, Coinbase was one of the first few exchanges to allow users to unstake their ETH.

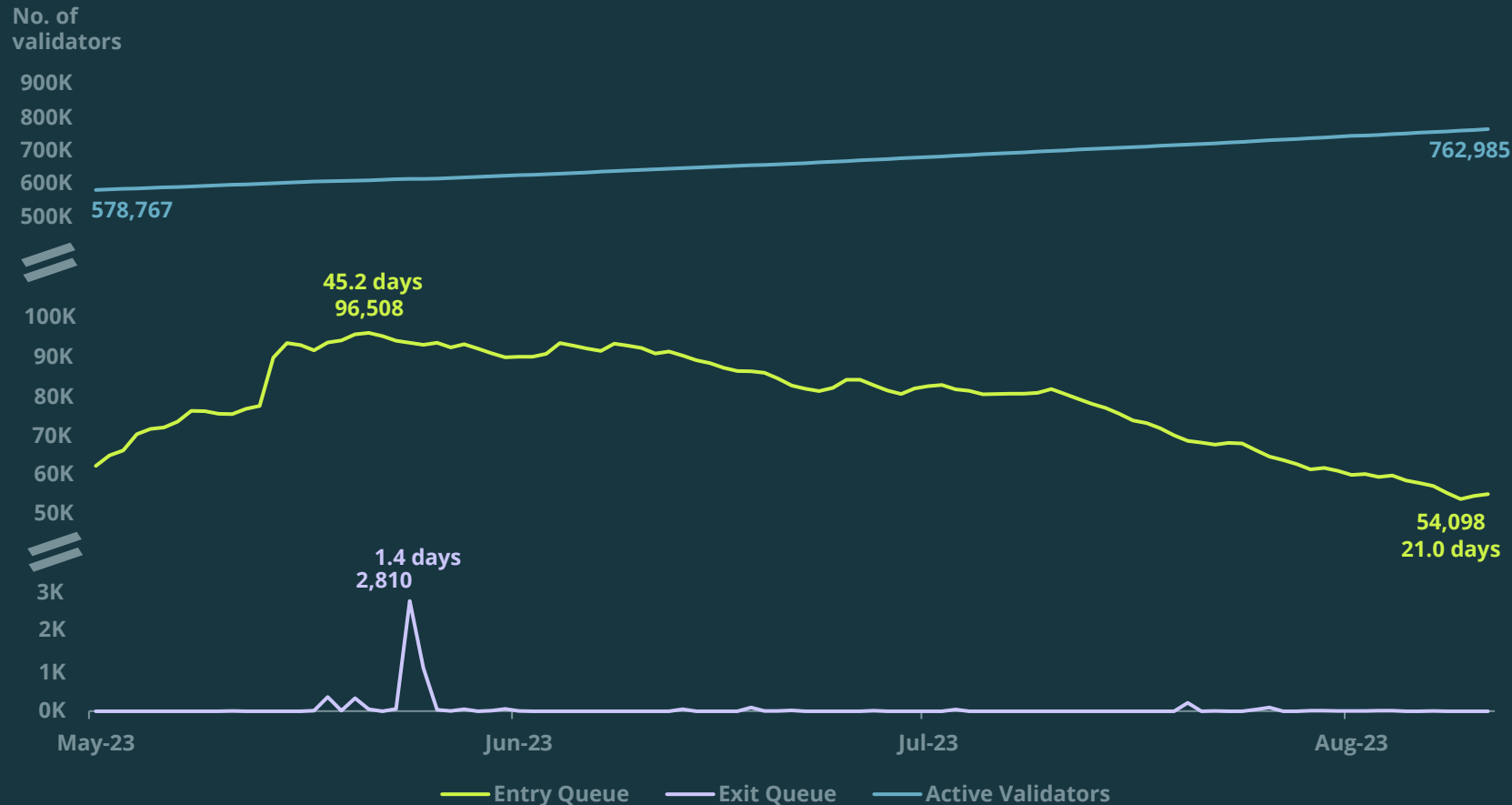
Leading the LSD space, Lido continues to see the **largest flows of ETH post-Shapella**, averaging daily net inflows of +18K ETH. May 18 saw the **largest net outflow to date with just over 400K ETH** withdrawn from Lido alone.

Just a week later on May 24, Lido recorded the highest daily net deposits post-Shapella, with **127K ETH staked**. Since then, ETH flows have stabilized from June to August, as deposits continue to surpass withdrawals across most LSD protocols except Ankr.

ETH Validator Queue

The validator entry queue quickly ballooned post-Shapella, at peak taking ~45 days for new validators to begin staking, while the exit queue has remained <10 for most of the time.

Ethereum Validator Queue (May 21, 2023 – Aug 31, 2023)



54,098

Validators in entry queue as of Aug 31, 2023 (or 21 days)

The Ethereum network has a **“churn limit”** which limits the number of validators that can enter or exit the network. This limit changes based on the number of active validators. A “queue” forms when the number of validators waiting to enter or exit exceeds the churn limit. As of end-Aug, daily churn stood at 2,475.

The **entry queue peaked at 96,508** on June 10, but has since steadily **declined to 54,098** as of August 31. At its peak, validators had to wait ~45 days to begin staking.

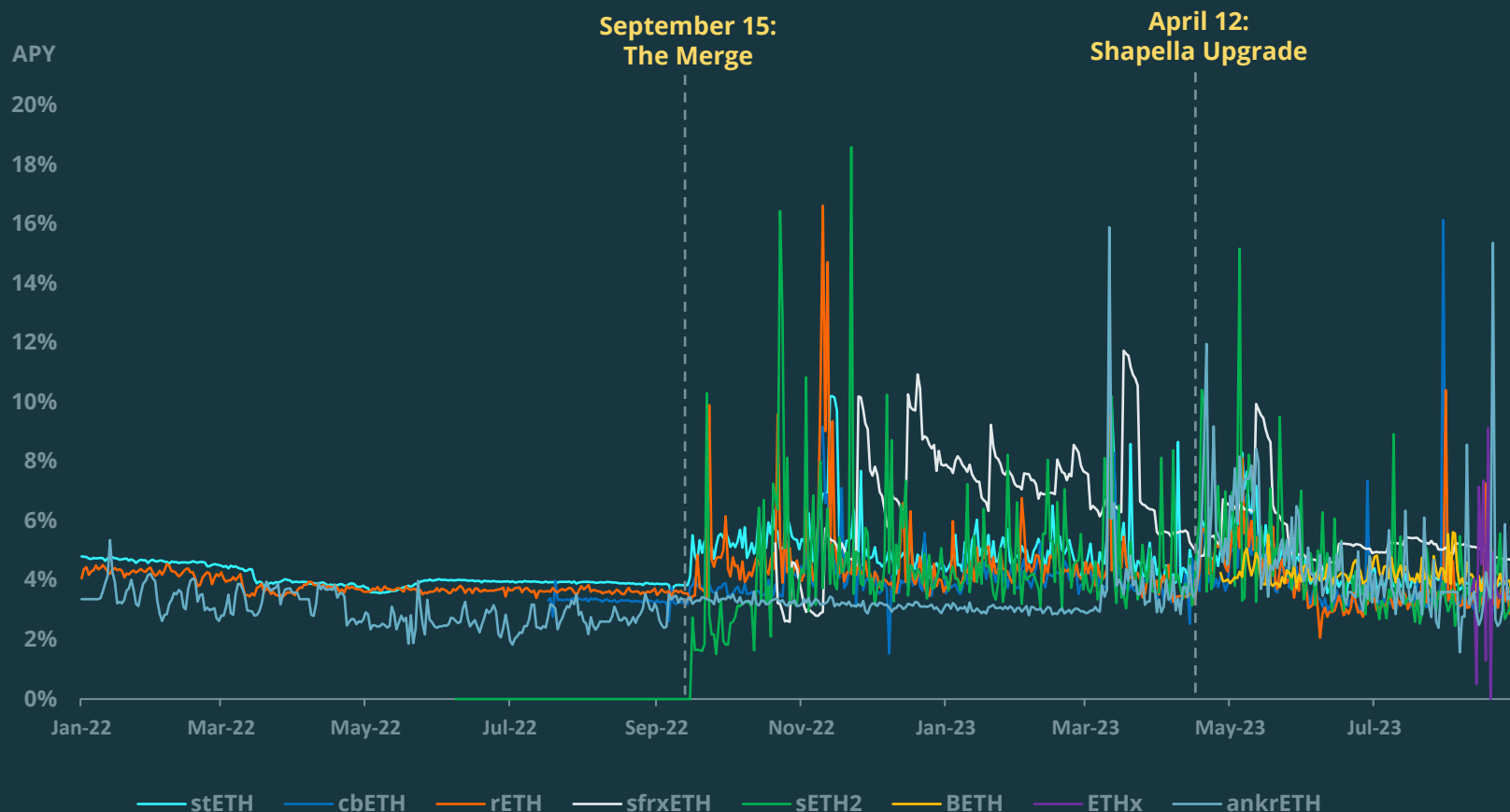
The **exit queue** saw a brief spike on June 13, **peaking at 2,810** which coincided with when ETH saw a price correction in the following days, plunging from \$1,742 to \$1,651.

Overall, **the exit queue was at 0 for over half (55%) the time** and stayed **<10 for 77% of the time**.

Historical Yield of ETH Liquid Staking Derivatives

Annual Percentage Yield (APY) for Top 8 LSDs have averaged 4.4% since January 2022, with Frax leading the way. However, the yield is expected to decline as more ETH is staked.

Annual Percentage Yield (APY) of Top 8 ETH LSDs (Jan 2022 – Aug 2023)



4.4%

Average Annual Percentage Yield since Jan '22

The top 8 ETH LSDs have an **average yield of 4.4% APY** since January 2022, with overall yields spiking during significant events within the crypto space (Ethereum Merge in Sep '22, FTX collapse in Nov '22, USDC depeg in Mar '23 and Shapella Upgrade in Apr '23).

Since January 2022 to August 2023, Frax's **sfrxETH** has been the **best performing LSD** in terms of average yield with **6.2%**. Lido's **stETH** is second with **4.6%**, followed closely by StakeWise's **SETH2** with **4.5%**.

The **other LSDs** offer yields ranging from **3.9% - 4.2%**, with Ankr's ankrETH being the exception, with the **lowest average yield of 3.5%**.

As of August 2023, the average yield across Top 8 LSDs is now at ~3.28% with 26.1 million total ETH staked. Yields are expected to continue to **decline** as the number of ETH staked increase.

Source: [DeFi Llama](#), [Dune Analytics \(@valdorff, @index_coop, @ankr_analytical\)](#), [Frax Finance](#), [Ultrasound Money](#)

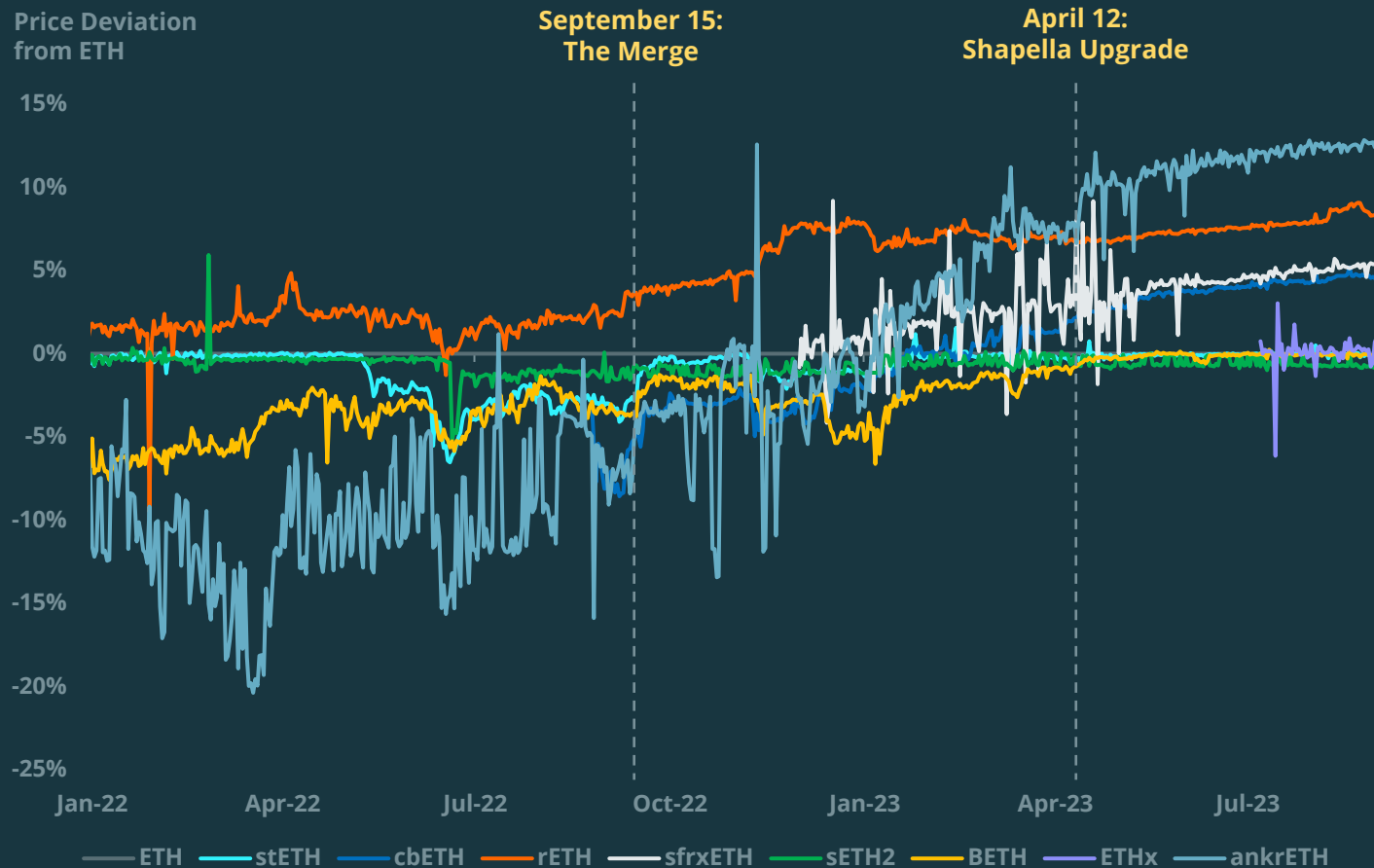
*Data up to August 31, 2023

**Data incomplete for stETH (Dec 2020 – May 2021), Seth2 (Mar 2021 – Jun 2022), BETH (Dec 2020 – Apr 2023), ETHx (Jul 2023 – Aug 2023)

Price Deviation of Liquid Staking Derivatives against ETH

Rebase and dual-token LSDs have largely maintained peg with ETH post-Shapella after trading at a discount pre-Merge; Yield-bearing LSDs have gradually appreciated as rewards accumulate.

Price Deviation of Top 8 ETH LSDs vs ETH (Jan 2022– Aug 2023)



	Price Deviation from ETH (as of 1 September 2023)	Average Price Deviation from ETH (Pre-Shapella)
ETH	0.0%	0.0%
stETH	-0.1%	-1.1%
cbETH	4.8%	-1.9%
rETH	8.2%	3.7%
sfrxETH	5.4%	1.9%
sETH2	-0.3%	-0.8%
BETH	-0.1%	-4.4%
ETHx	-0.8%	N/A*
ankrETH	12.6%	-5.6%

Prior to the Merge, most staking derivatives were trading lower than ETH, with ankrETH experiencing **discounts of up to 20%** as capital flowed out after utilizing ankrETH to farm incentives.

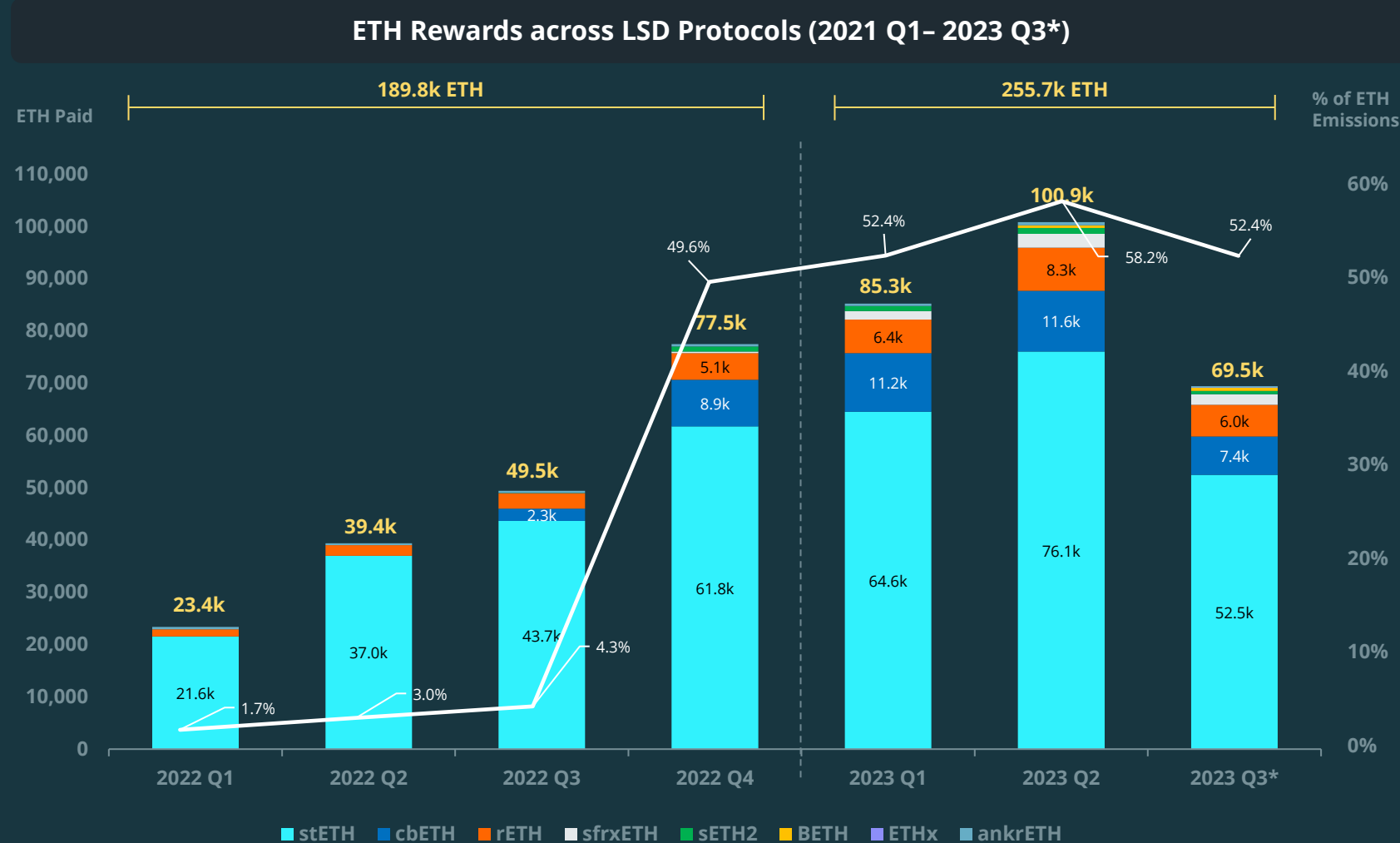
Post-Shapella, the prices of LSDs with different designs have begun to follow a logical predictable pattern.

LSDs that **recompound their staking rewards** back into the underlying ETH pool (cbETH, sfrxETH) are naturally **trading at a premium compared to ETH**. The older LSDs, such as rETH and ankrETH, are currently trading at **premiums as high as 12.6%**, accounting for rewards accrued over a longer period.

On the other hand, LSDs that have segregated rewards (stETH, sETH2, BETH) are trading closer to parity with ETH.

ETH Staking Rewards Distributed Across LSD Protocols

LSDs now distribute ~100k ETH in staking rewards every quarter, having now captured more than half the share of all ETH emissions from the protocol since 2022 Q4.



445.4K

Ethereum Staking Rewards Distributed Since 2022

ETH staking rewards distributed across the top 8 LSDs have been on an **upward trend**, capturing up to **52.4%** of all ETH emissions in 2023 Q3 thus far*. Since the 2022 Q4 LSDs have captured more than half of all ETH emissions.

Lido's stETH dominates the majority of ETH rewards distributed, distributing **75.6% of the top 8 LSDs rewards** in 2023 Q3. However, its dominance have been on a **downtrend**, as newer LSDs such as **cbETH**, **rETH** and **sfrxETH gain traction**, distributing **22.2%** of the top 8 Ethereum staking rewards in 2023 Q3.

On the other hand, **ankrETH** have been **losing share** in Ethereum rewards being distributed in line with its loss in TVL, distributing only **0.4%** of Ethereum staking rewards in 2023 Q3.

Source: [DeFi Llama](#), [Dune Analytics \(@valdorff, @index_coop, @ankr_analytical\)](#), [Frax Finance](#)

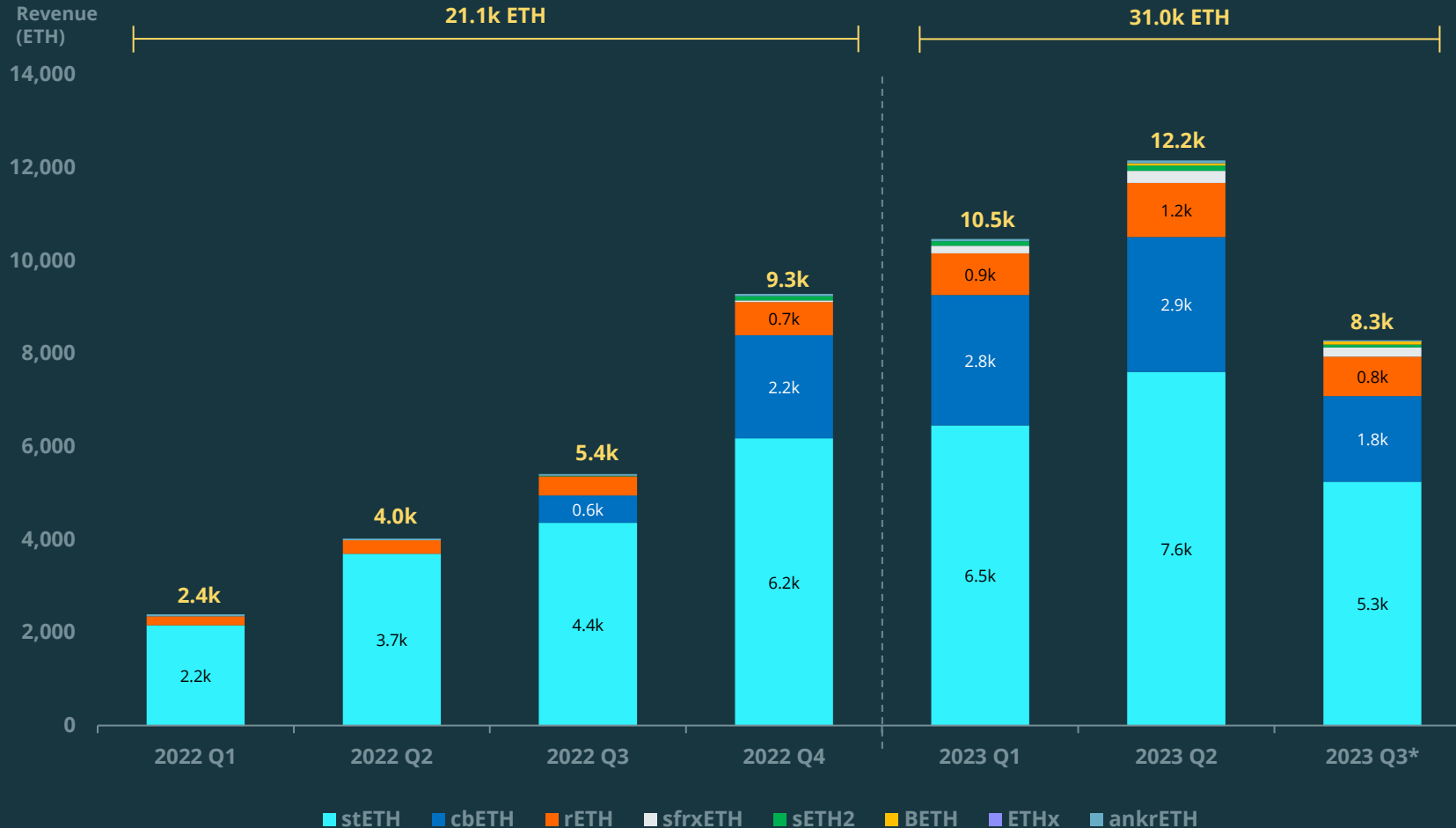
*Data up to August 31, 2023

**Data incomplete for stETH (Dec 2020 - May 2021), Seth2 (Mar 2021 - Jun 2022), BETH (Dec 2020 - Apr 2023), ETHx (Jul 2023 - Aug 2023)

ETH Staking Fees Earned Across LSD Protocols

LSDs also charge a staking fee from the rewards, with most of it going back to the protocol itself; However, some protocols have found ways to accrue value back to their governance token.

ETH Staking Fees across LSD Protocols (2021 Q1 – 2023 Q3*)



52.0K

ETH Accumulated as Fees Since 2022

Lido has accumulated the most fees among the top 8 LSDs, amounting to 35.7k ETH, followed by Coinbase and Rocket Pool. Together, **these three** protocols **account for 97.2% of all fees earned** across the top 8 LSD Protocols.

While most LSDs adhere to a 10% fee, **Coinbase** stands out by charging a **25% fee** on top of staking rewards. **Rocket Pool** is another exception, charging a **14% fee**.

Frax and **Stader** generate value for holders of their respective governance tokens through **staking fees**. In the case of sfrxETH, a portion of the staking fees is utilized to acquire its native token, FXS, and subsequently distributed as yield to veFXS stakers. Staking fees generated from ETHx are distributed to SD holders who lend their SD to node operators, assisting them in fulfilling the minimum 0.4 ETH in SD required to setup.

Source: [DeFi Llama](#), [Dune Analytics \(@valdorff, @index_coop, @ankr_analytical\)](#), [Frax Finance](#)

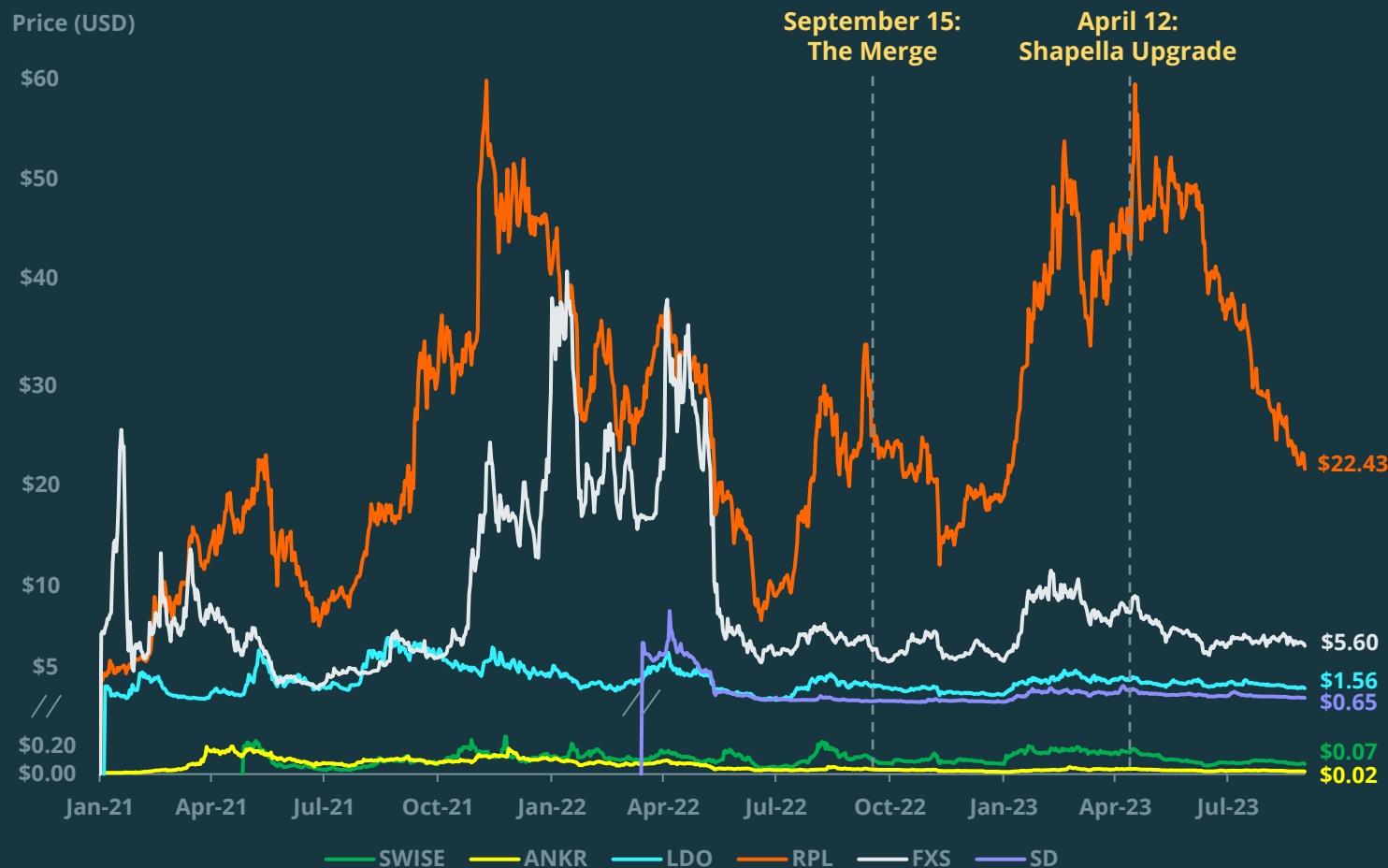
*Data up to August 31, 2023

**Data incomplete for stETH (Dec 2020 – May 2021), Seth2 (Mar 2021 – Jun 2022), BETH (Dec 2020 – Apr 2023), ETHx (Jul 2023 – Aug 2023)

Price Returns of Top 6 Liquid Staking Governance Tokens

For LSD Governance Tokens, SD (Stader) proved to be the top mover leading up to Shapella, rising by 425%, while prices of other LSD governance tokens also increased by more than 2x.

Top 6* Liquid Staking Governance Tokens Price Returns (Jan 2021 – Aug 2023)



	Circulating Supply**	Market Cap**	Fully Diluted Valuation**
LDO	888M	\$1.4B	\$1.6B
RPL (Rocket Pool)	19.7M	\$442M	\$442M
FXS (Frax)	73.5M	\$411M	\$558M
SWISE (StakeWise)	276M	\$20M	\$72M
SD (Stader)	29.3M	\$19M	\$98M
ANKR	10.0M	\$186M	\$186M

Although the Merge was a significant event for the Ethereum network, the aftermath of the Terra collapse presented bleak market conditions as LSD governance tokens remained stagnant, except RPL which **spiked temporarily to \$34** on September 11, 2022.

The Shapella upgrade this year proved to be a more impactful catalyst, as governance token prices **more than doubled** from January 2023 to April 2023. Stader proved to be the biggest winner, **surging by 425% from \$0.27 to \$1.41**. However, as the LSD hype waned post-Shapella, token prices slowly resumed their descent.

Source: CoinGecko

*BETH and cbETH do not have governance tokens

**Data as of September 1, 2023

Overview of LSDFi Protocols

The wide adoption of LSDs have allowed protocols to build on top of this new core primitive, resulting in a new emerging DeFi segment known as 'LSDFi'.



Pendle



Flashstake

Fixed Yield

- Fixed interest protocols such as Pendle and Flashstake separate the staking yield from liquid staking tokens, allowing users to hedge their yield at current rates.
- Pendle allows users to purchase ETH at a discount and receive a fixed amount of ETH upon a chosen maturity date.
- Flashstake lets users lock in their ETH or LSDs for a chosen duration to receive yield tokens from a selection of various assets.



Lybra



Gravita



Raft

Collateralized Stablecoins

- Similar to MakerDAO's Maker Vaults, protocols such as Lybra, Gravita and Raft allow users to deposit their LSDs as collateral to borrow/mint the protocol's native stablecoin.
- These protocols typically maintain a collateralization ratio above 150%, along with other stablecoin mechanisms such as stability pools and redemptions.
- Lybra distributes the generated yield from the underlying LSDs to stablecoin holders, creating a yield-bearing stablecoin.



EigenLayer



Tenet

Restaking

- EigenLayer introduced the concept of restaking, where users could reuse their LSDs to provide security to other dApps on the network and earn additional rewards in the process.
- Tenet expands on this concept, utilizing LSDs as collateral for securing its own Layer-1 network. Holders can stake their existing LSDs with the network's validators, as well as earn fees and rewards from the network's ecosystem of protocols.



unshETH



Origin ETH



Asymetrix

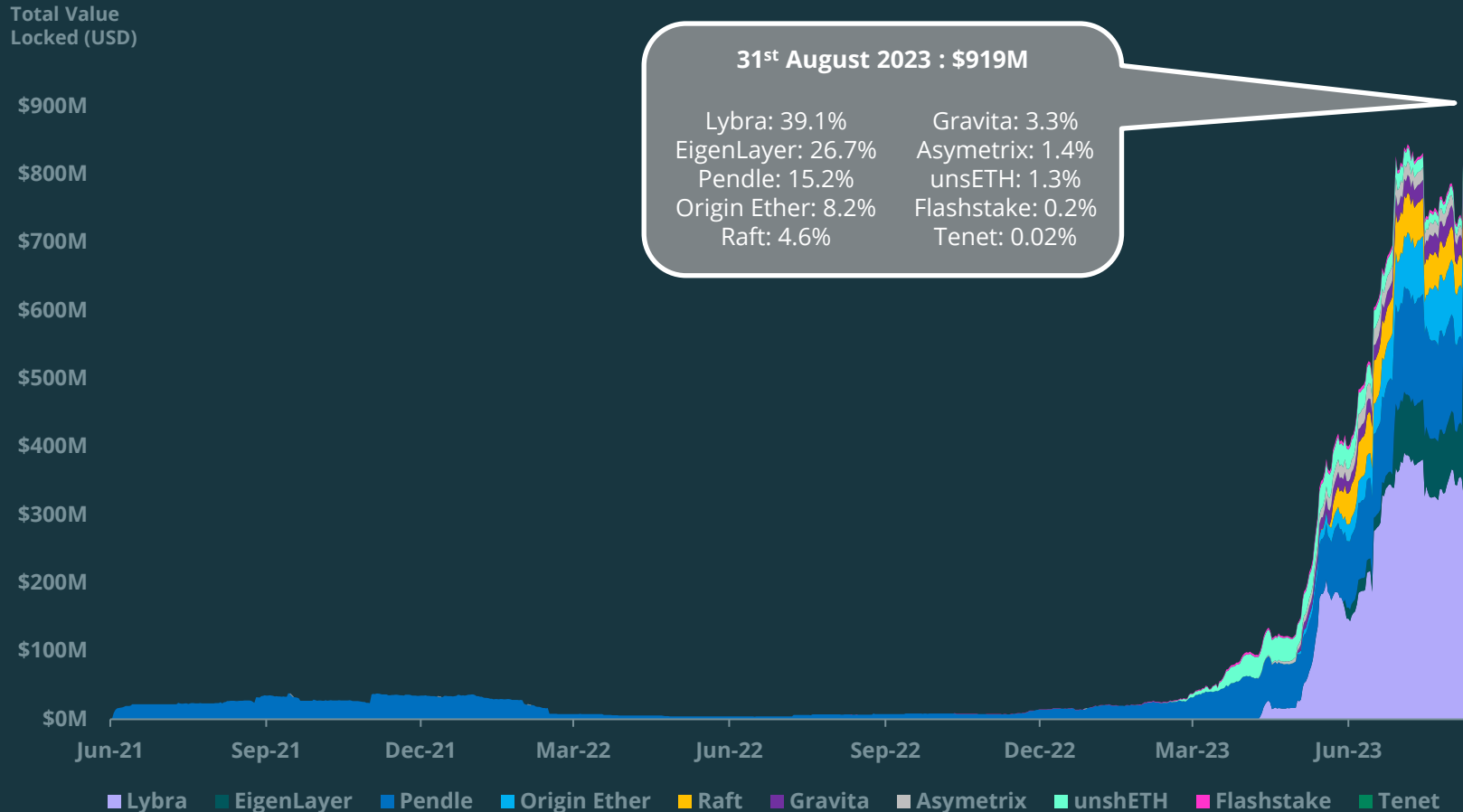
LSD Indices & Yield Aggregators

- LSD indices offer a diversified basket of staked assets, allowing holders to gain exposure to varying yield rates from different LSD protocols, through a single token.
- The index tokens can be minted using ETH or the underlying LSDs, where they will be used in various DeFi strategies to earn additional swap fees and token rewards.
- On Asymetrix, daily staking rewards are pooled and randomly distributed to selected stakers. Users that were not chosen get to keep their initial deposits and stakers are incentivized to stay staked to earn native ASX tokens.

Multichain TVL Across Top 10 LSDFi Protocols

The LSDFi sector has grown by 58.7x since January 2023, with 81% dominance by Lybra, Pendle and EigenLayer; inspired by Pendle's success, most contenders only emerged post-Shapella.

Total Value Locked (TVL) Across Top 10 LSDFi Protocols (Jan 2023 – Aug 2023)



\$919M

TVL Across Top 10 LSDFi Protocols on Aug 31, 2023

Although Pendle was launched in 2021, it only saw interest amidst **surging popularity of LSDs in 2023**. Pendle saw a significant increase in TVL as users flocked in to speculate on yields, **rising by 903%** from \$15.4M to \$139.4M since the start of 2023.

Post-Shapella, the LSDFi sector continued to **grow with new protocols** entering the space such as Lybra Finance, Raft and EigenLayer .

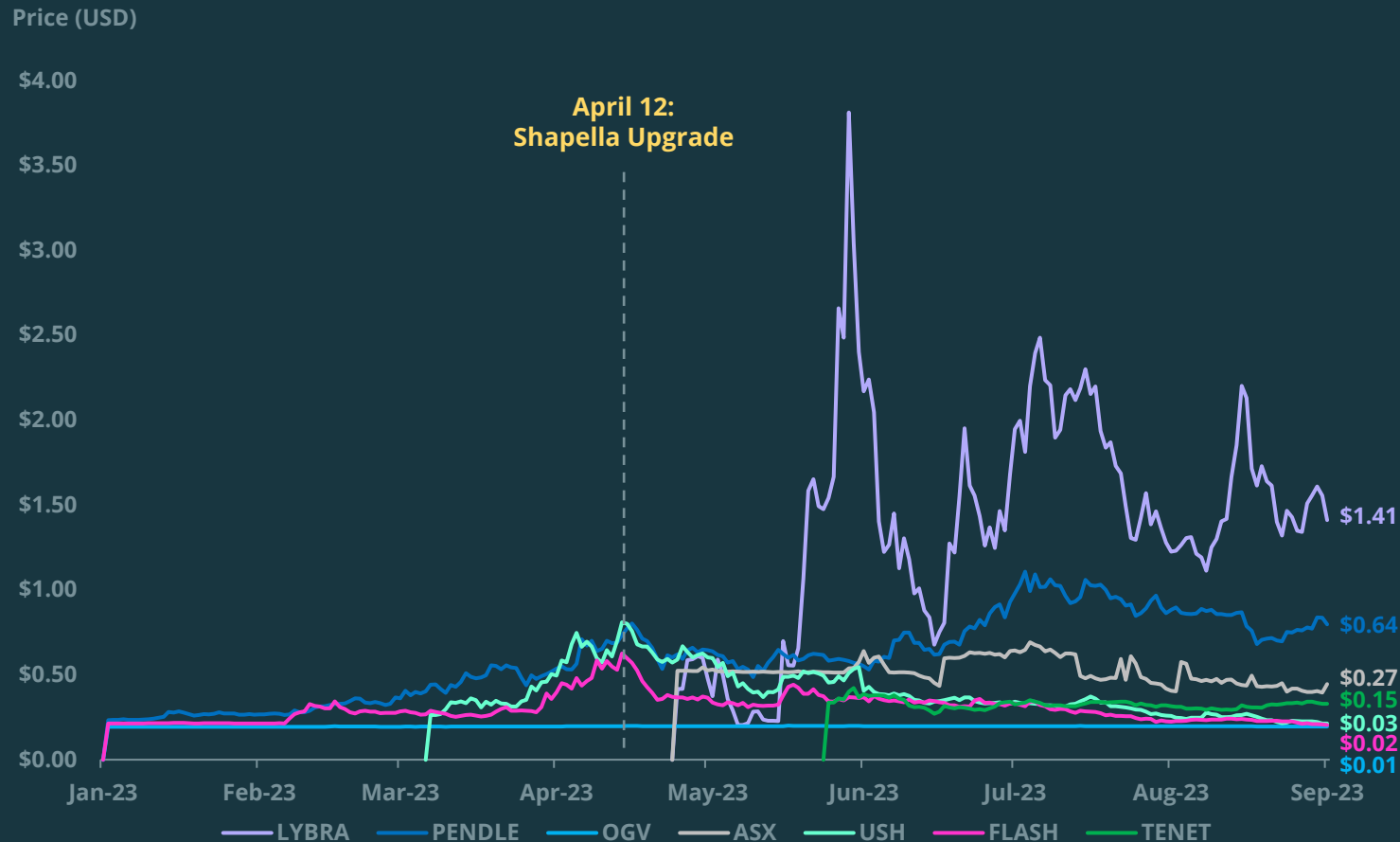
In just over 3 months, Lybra has become the top LSDFi protocol **with 39.1% share** of TVL. Its TVL **rose by 98.3x** from an initial \$3.6M to \$359M between April to August 2023.

Launched in June 2023, EigenLayer has quickly become another top LSDFi protocol, attracting over **\$245M in TVL** despite deposit caps. Beyond the hype surrounding restaking, its success could also be attributed to users hoping for a **potential airdrop**.

Price Returns of Top 7 LSDFi Governance Tokens

Amongst LSDFi Governance Tokens, \$PENDLE enjoyed a stellar run throughout the first half of 2023, but \$LYBRA stole the show soon after, rising by nearly 9x at its peak.

Top 7* LSDFi Governance Tokens Price (Jan 2023 – Aug 2023)



	Circulating Supply**	Market Cap**	Fully Diluted Valuation**
LYBRA	15M	\$21M	\$141M
PENDLE	97M	\$62M	\$165M
OGV (Origin)	653M	\$4M	\$28M
ASX (Asymetrix)	10M	\$3M	\$27M
USH (unshETH)	48M	\$1M	\$4M
FLASH (Flashstake)	55K	\$870K	\$2M
TENET	119M	\$17M	\$175M

Despite a slow start in January 2023, \$PENDLE has recorded a **14x price increase from \$0.04 to \$0.63** at the end of August. The platform's TVL continued to grow exponentially even post-Shapella, pushing \$PENDLE to a **yearly high of \$0.96** in July 2023. Interestingly, while other LSDFi tokens such as \$USH and \$FLASH mimicked \$PENDLE's pre-Shapella run-up and subsequent pullback, their prices have **declined further** since then.

Dominating the LSDFi space post-Shapella, \$LYBRA has **surged by 9x** from its initial price of \$0.42 in April to \$3.80 in May 2023. However, the token price has since **plummeted to \$1.41**, while other tokens that emerged launched post-Shapella, such as \$ASX and \$TENET, have retained their momentum thus far.

Source: CoinGecko

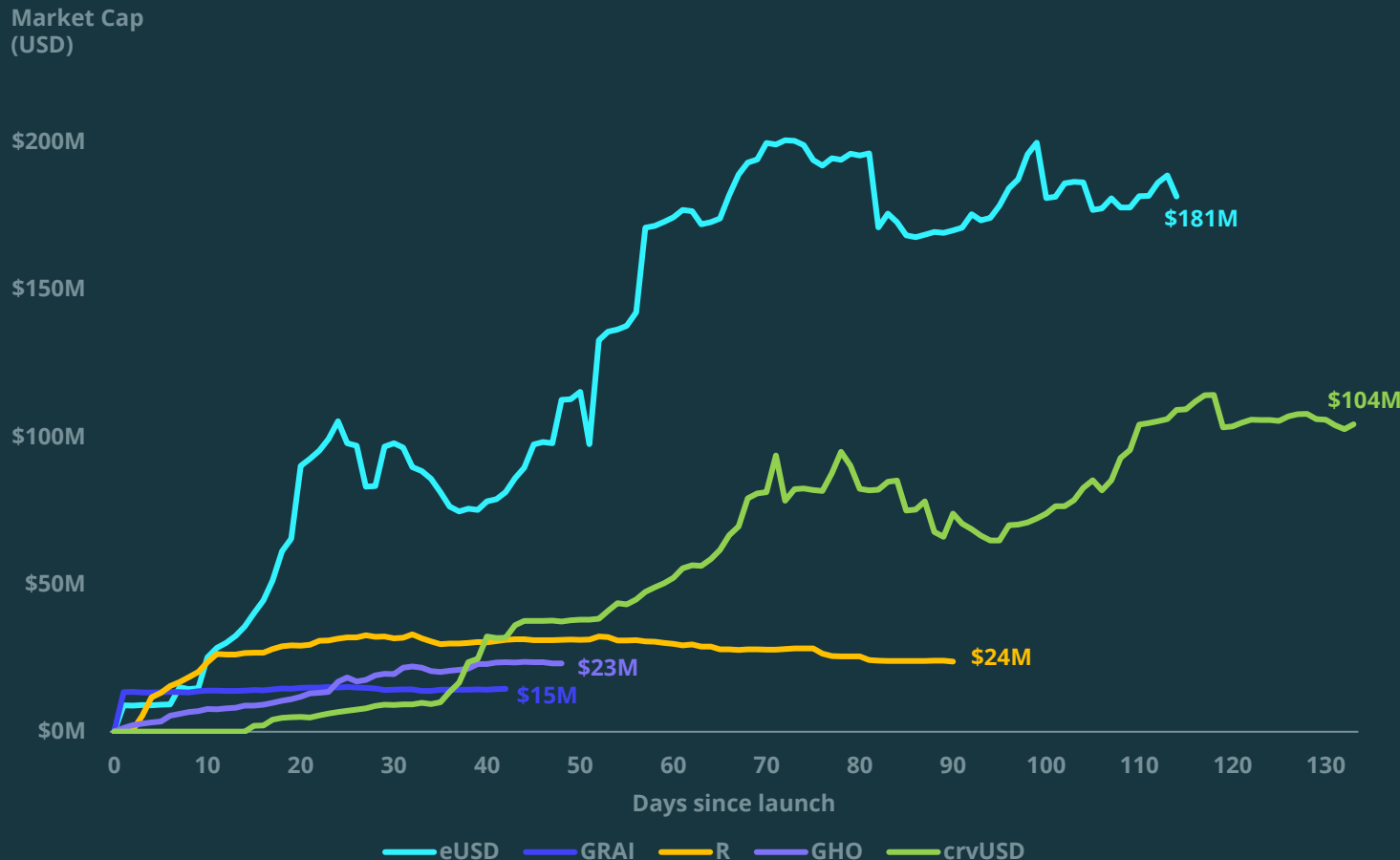
*EigenLayer, Gravita & Raft have not launched their governance tokens

**Data up to September 1, 2023

Market Cap of DeFi & LSD-Backed Stablecoins

Launched just 4 months ago, Lybra's yield-bearing eUSD stablecoin has increased its market cap by 19.2x, surpassing crvUSD and dominating 82% of the LSD stablecoin sector.

Market Cap of DeFi & LSD-Backed Stablecoins (since inception)



	Stablecoin Value*	Circulating Supply*	Market Cap*
eUSD (Lybra)	\$1.06	15M	\$181M
GRAI (Gravita)	\$0.98	97M	\$15M
R (Raft)	\$0.99	653M	\$24M
GHO (Aave)	\$0.98	10M	\$23M
crvUSD (Curve)	\$1.00	48M	\$104M

Lybra's eUSD is now the largest LSD-backed stablecoin in the market, reaching \$100M market cap in 24 days since its inception. **It now controls 82% market share for LSD stablecoins.** Others such as R and GRAI have yet to catch up.

In comparison to other recently released decentralized stablecoins by Curve and Aave, eUSD has also outpaced their growth, with crvUSD only sitting at a **market cap of \$104M.**

However, it is important to note that amongst this group, only crvUSD has managed to retain peg, while the rest are **currently off-peg.**



Tenet creates the building blocks for the future of LSDs, solving the problems of accessibility, security, and decentralization. Tenet's core products allow users to access yield bearing base assets for use across the entire ecosystem.

Restaking

Restake LSDs with Tenet and harness enhanced yields. Your assets not only bolster the Tenet network's security but also empower you with a voice in the ecosystem governance.

LSDC

Restake your LSDs and fuel the evolution of stablecoins. LSDC, enriched by yield-driven collateral and steered by the collective voice of LSDfi ecosystem holders, expertly tackles capital efficiency, decentralization, and scalability.

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The Future of LSDs & LSDFi

LSDFi is just getting started, and LSDs are going to become more deeply integrated with DeFi as adoption continues to grow.



LSD and LSDFi on Layer2s (L2s)

- Currently, stETH and rETH are the only two established LSDs which have deployed natively to L2s such as Arbitrum and Optimism, and LSDFi protocols such as Pendle, unshETH and Lybra have also followed suit.
- Deploying on an L2 have allowed these protocols to **capture more users and enable better liquidity**, particularly for smaller ticket sizes. Expect more of their competitors to also begin taking these steps as well.
- The core thesis of L2s, i.e, cheaper gas fees and better performance, hold true as well for LSDs and LSDFi, and in the future we expect to see **greater product experimentation and innovation on L2s** given the greater technical possibilities, and relatively lower risk.



Deeper DeFi Integration

- While LSDFi is the starting point of protocols building on-top of the new LSD primitive, what we've witnessed thus far is just the tip of the iceberg. We expect the broader utility of LSDs within all DeFi verticals to only increase.
- Theoretically any DeFi protocol that supports WETH should also **eventually add support for LSDs** as adoption of LSDs grow. Other LSDFi products, such as stablecoins, will also fit nicely into existing DeFi frameworks and can also be integrated if there is traction.



Distributed Validator Technology (DVT)

- A minimum of 32 ETH is required to solo stake, which represents a barrier to entry for some potential stakers. Besides that, stakers need to ensure their nodes are constantly available to avoid slashing penalties.
- DVT aims to alleviate some of these issues by enabling **"squad staking"**, allowing few parties to pool their ETH stake and hardware capacity to run a single node, while also improving node security through the use of a multi-sig.
- This will also help in further distributing the node operator set as it allows more stakers to participate, **reducing concentration risk**.
- At time of writing, all established LSD protocols are in the midst of exploring or implementing DVT, while some LSDs with DVT already enabled, e.g. Diva have also come to market.



Institutional / TradFi Participation

- Institutional ETH staking offerings has existed since at least 2021 but has recently gained more prominence post-Shapella upgrade as withdrawals were enabled. While the early offerings were pure custodial-staking solutions, there are projects that are beginning to roll-out **institutional-grade LSD offerings**, such as Alluvial / Liquid Collective, Blockdaemon and RockX.
- Beyond institutional LSDs, consider other TradFi products such as funds and ETFs that have an ETH component, but can now **enhance their returns by introducing LSDs**. New portfolio strategies could also be introduced to take advantage of this new yield-bearing asset.

Lido: Winner Takes Most vs Sacrifice for the Greater Good

Lido's dominance have stoked fears of cartelization and concentration risks, triggering fierce debate on whether the protocol (and LSDs in general) should self-limit.



As far back as 2021, Hasu (who went on to become Strategic Advisor at Lido) had already posited that staking will be a winner-take-all market due to the liquidity moat and network effects of being the dominant player. Since then, his thesis seems to have largely played out, with stETH now representing >30% of all staked ETH, and 76% of LSD market share.



Lido's dominance have stoked fears of cartelization and concentration risks, particularly given Lido's permissioned validator model. This has led to repeated calls by certain sections of the Ethereum community for LSD protocols to self-limit their share of the ETH staking market share (Thresholds ranging from 15%, 22% and 30% were proposed).



More extreme proposals to enforcing a distributed LSD market include implementing limits at the Ethereum protocol level itself, essentially imposing penalties for LSD protocols that have crossed a certain market share threshold. While some other LSDs have signaled their support to self-limit, Lido DAO in June 2022 voted overwhelmingly to reject such a proposal.



The issue is particularly nuanced – while Lido currently operates a permissioned model, its stake is distributed between 29 node operators, with the largest operators only holding 1.2% of total ETH staked. The project also announced its V2 in February 2023, which includes making its node operator set permissionless, and enabling different type of stakers to become a Lido node operator. Supporters of Lido has asked detractors to work closer with the Lido team and within Lido governance to ensure that the protocol meets its decentralization goals, instead of attempting to fight market forces with social coercion to self-limit.



Just prior to the publication of this report, EIP-7514 was proposed to slow the growth of the number of validators on the network, due to the explosive growth in ETH being staked in the network, and the growth in number of validators post-Merge and Shapella. While Lido was not mentioned in the official EIP documentation, and this upgrade will impact all LSD protocols, prominent commentators have cited Lido's growing dominance as a reason for supporting this EIP.



Given that EIP-7514 will only be implemented during the Dencun upgrade (targeted for end of this year), there may be a rush for more potential ETH stakers still sitting on the fence to rush in to join the queue before the new limits kick in.

Conclusion & Key Takeaways

- With the launch of Ethereum's Beacon chain on Dec 1, 2020, validators could participate in PoS and earn staking rewards. However, the **required 32ETH staked was a barrier of entry** for smaller users, leading to the **creation of pooled staking and LSDs**.
- While LSD protocols offer similar staking services, they tend to differ in terms of node operator set, fees, supported networks, and methods for distributing rewards. By the end of August 2023, **total ETH staked across LSD protocols reached a high of 11.3 million ETH**, or 43.7% of the overall 26.4 million ETH staked on the network.
- **Staking on LSD protocols have only accelerated** post-Shapella even though withdrawals were enabled. The validator entry queue quickly ballooned post-Shapella, at peak taking ~45 days for new validators to begin staking, while the exit queue has remained <10 for most of the time.
- **Annual Percentage Yield (APY) for Top 8 LSDs have averaged 4.4%** since January 2022, with Frax leading the way. However, the yield is expected to decline as more ETH is staked.
- LSDs now distribute **~100k ETH in staking rewards every quarter**, having now captured **more than half the share of all ETH emissions** from the protocol since 2022 Q4.
- The wide adoption of LSDs have allowed protocols to build on top of this new core primitive, resulting in a **new emerging DeFi segment** known as 'LSDFi'.
- The LSDFi sector has **grown by 58.7x** since January 2023, with 81% dominance by Lybra, Pendle and EigenLayer; inspired by Pendle's success, most contenders only emerged post-Shapella.
- **LSDFi is just getting started**, and LSDs are going to become more deeply integrated with DeFi as adoption continues to grow. However, there are also risks - Lido's dominance have stoked **fears of cartelization and concentration**, triggering fierce debate on whether the protocol (and LSDs in general) should self-limit.



THAT'S ALL! THANK YOU FOR READING :)



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