

Risk Assessment - stETH Collateral Asset on FiRM

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Useful Links

- Coingecko: <https://www.coingecko.com/en/coins/lido-staked-ether>
- Website: <https://lido.fi/>
- Github: <https://github.com/lidofinance>
- Medium: <https://lidofinance.medium.com/>
- Twitter: <https://twitter.com/LidoFinance>
- Main Discord: <https://discord.com/invite/lido>
- Bug Bounty: <https://lido.fi/bug-bounty>
- Docs: <https://docs.lido.fi/>
- Governance: <https://lido.fi/governance>
- Forum: <https://research.lido.fi/>
- Defi Safety Report: <https://defisafety.com/app/pqrs/437>

Background

Lido allows users to earn staking rewards on Ethereum without locking ETH or maintaining staking infrastructure whilst participating in on-chain activities, e.g. lending. This is achieved through the stETH token which represents a tokenized staking deposit.

Lido attempts to solve the problems associated with initial ETH staking. Illiquidity, immovability and accessibility.. Making staked ETH liquid and allowing for participation with any amount of ETH to improve performance on the Ethereum network.

When staking with Lido, users receive stETH tokens which are issued 1:1 to their initial stake. stETH balances can be used like regular ETH to earn lending rewards, and are updated on a daily basis to reflect your ETH staking rewards (rebase).

The liquid nature of stETH is enabled by deep liquidity pools across multiple chains, AMM's and CEX's .. stETH and wstETH (the borrowing enabled version of the rebase token) paired with ETH are among safer more reliable LP's in the defi space.

The popularity of liquid staking protocols like stETH is expected to increase as Ethereum's Shanghai upgrade (expected in March 2023) will allow staking withdrawals. Today only 14% of ETH supply is staked while many L1's enjoy staking of 40% or more of their tokens. Liquid staking derivatives like stETH are likely to be the preferred method of staking ETH post-Shanghai as they allow users to retain the rewards of stETH while enabling it as collateral for DeFi lending, for example.

Protocol Analysis

Org. Structure

- ☐ **Is the Protocol a DAO? How is it governed eg. delegates , snapshot**

[Governance Process](#)

Lido is a DAO, using a combination of research forum, snapshot, and on-chain governance Lido DAO decides on key parameters (e.g. fees) and executes protocol upgrades to ensure efficiency and stability. By holding the LDO governance token, one is granted voting rights within the Lido DAO.

- ☐ **Does Protocol publish analytics / transparency via Dune or similar?**

Lido offers multiple tools for Analytics and is very transparent of all operations and is clearly defined in their user interface.

[Dune Analytics](#)

[Nansen Analytics](#)

[Ethereum Scorecard](#)

[Token Terminal](#)

- ☐ **Working group structure**

[Founders](#)

The Lido team consists of 83 full time contributors spread between 20 Work streams or working groups outlined in the Lido DAO [core contributors provisional budget](#).

☐ **Are core contributors compensated / Doxed?**

There are routine budget requests and provisional budget reports found throughout the [research forum](#). The Lido provisional budget can be found [here](#)

☐ **Any known controversies in crypto space**

No notable controversies although the stETH has been subjected to FUD surrounding the stETH/ETH peg multiple times. Users seem easily spooked at the possibility for stETH to completely depeg to zero. We have no reason to believe this is a realistic cause for concern post merge, and given the string of successful upgrades to Ethereum leading up to Shanghai.

stETH Peg tracker [here](#)
[Nansen research, On-Chain Forensics: Demystifying stETH's "de-peg"](#)

☐ **Do they have a security or risk management team**

[The Audits Committee](#) aims to reduce the operational load of the dev team, optimizing audit pipelines, communicating with auditors and the DAO on related topics, and also increasing awareness of Lido security standards within the community. The main goals of the committee are outlined in the proposal, this is Lido's version of Risk Working Group or Sec-Ops.

Multisig Structure

☐ **Is protocol transparent of multi-sigs and signers, List/links of multisigs, purpose, and setup x of x**

[reWARDS Multisig](#) (4 of 6) , The multi-sig would be able to start Easy Track motions to whitelist rewards programs addresses or remove those from the whitelist, as well as sending funds to those addresses.

[Resourcing and Compensation Committee \(RCC\)](#) (3 of 6), The three main departments that the RCC shall comprise of and exist to fund, to start, includes the Node Operator Management (NOM) department led by the DAO's official Master of Validators, the Business Development (BD) department led by the DAO's official Head of Business Development, and the Marketing and Community (MKTNG) department led by the

DAO's official Head of Marketing and Community.

[Bridge Guardian Multi-sig](#) (4 of 7) According to Lido's high security standards, it is critical to define the actors capable of upgrading the bridging solution on both L1 and L2 sides, as well as using emergency brakes functionality to disable deposits and withdrawals.

- DAO Agent can trigger implementation upgrade on L1 (via DAO voting)
- DAO Agent can disable and enable deposits and withdrawals on the L1 side
- Ethereum mainnet Bridge Guardian Multi-sig can disable deposits and withdrawals on the L1 side in case of emergency (no need to wait 3 days of DAO voting)
- Optimism Bridge Guardian Multisig can trigger implementation on the L2 side
- Optimism Bridge Guardian Multisig can disable and enable deposits and withdrawals on the L2 side

☐ **Can multisigs interfere with collateral options? EOA minting**

The bridge guardian multisig can disable deposits and withdrawals. This multisig can also upgrade the bridging solution.

☐ **Influence, Reputation, and Partnerships**

The Lido team is very reputable and trusted in the DEFI space.

☐ **How long has the protocol been around , have they endured long bear markets?**

The first completed audit of stETH was 12-2022 , we assume this to be genesis.

☐ **Have they been exploited and how was it handled , was value restored to users if affected.**

Lido Finance has never been exploited

☐ **Current and notable past partnerships , are they a net positive on the DEFI space**

No notable partnerships apart from token listings.

Lido Finance offers a [referral whitelist program](#) which many protocols have opted into. \$LDO is awarded to program participants who direct staking traffic to Lido. Alchemix has incorporated this staking function into their vaults , users can deposit ETH which is pushed through LIDO staking contracts to receive wstETH.

Audits & Bug Bounties

Previous and Ongoing

☐ Audits & Bounties

Dozens of Lido audits have been conducted over 2 years. Comprehensive list of audits can be found [here](#)

Lido offers bug bounty through [Immunefi](#) on five chains totalling \$10M in potential rewards (\$2M per chain)

Reward Payouts

☐ Rewards paid, vulnerabilities found with severity

Vulnerabilities have been found and mitigated over the years through various [audits](#).

We could find only one payout of the bug bounty program which was reported just 10 months after genesis.

[Critical Bug Bounty Payout](#)

Collateral Analysis

Oracles

☐ Available Chainlink Oracles

stETH/USD and stETH/ETH chainlink oracles on ethereum mainnet

☐ Does the asset have a backup oracle

No

☐ Any advanced oracle implementation required

No

Liquidity, and Liquidations

☐ AMM liquidity, (pools over 100k)

Asset	# Markets on Ethereum	# CEX	Primary Liquidity (\$)	Secondary Liquidity (\$)	Alternative Liquidity (\$)
stETH	5	4	Curve ETH/stETH (\$1.250B)	Uniswap WETH/stETH (\$3.53M)	Curve WETH/stETH (\$2.354M)

☐ **CEX markets with depth if available**

Huobi
MEXC Global
Bybit
LATOKEN

☐ **Liquidation Routing, Do liquidations require a wrapper?, accessibility**

No

☐ **Peg Risk if any**

Peg risk exists for stETH until the Shanghai ETH Mainnet upgrade. Currently the only way to “unstake” stETH for ETH is by using liquidity pools provided by reward farmers. stETH has deep sufficient liquidity but the risk of a “bank run” always looms. 1 stETH will always be worth 1 ETH after the Shanghai upgrade, during this time any volatility in spot pricing will only be temporary.

Resources for “de-peg”

<https://beincrypto.com/steth-depegs-whale-pulls-101m-eth-curve-finance/>

<https://www.nansen.ai/research/on-chain-forensics-demystifying-steth-depeg#introduction>

Tokenomics

☐ **Contracts, are they upgradable?**

Lido uses an upgradeable proxy structure that allows their immutable smart contracts to update the state of these proxies. Since the implementation/logic/code that holds user funds is effectively immutable, and all upgrades are surface level parameter changes that must be voted on, we consider Lido as immutable and non-custodial - 100%. These details can be found [here](#) and [here](#).

The LIDO bridging solution to L1 and L2 is upgradable using the [bridge guardian multisig](#)

☐ Market Cap History , Price History , Volatility

The stETH market cap has remained relatively stable in comparison to its ETH counterparty.



The price of stETH has remained nearly 1:1 pegged to ETH
ETH/stETH 1.00449437
stETH/ETH 0.99552573

☐ Coingecko / Coinmarket cap

[Coinmarketcap](#)
[Coingecko](#)

☐ Emissions Policy, what are emissions used for?

No stETH emissions apart from rebasing

Utility & Use Case

☐ Does the Token have utility, Can it retain the utility while supplied to FiRM?

stETH is not a governance token and carries no voting rights.

☐ Do direct competitors offer this collateral asset

stETH is available on multiple competitive lending platforms including Aave, Fraxlend, and Oasis (MakerDAO).

☐ Liquid or locking feature

While stETH remains liquid through DEX and CEX LP's there is no functional unstaking contract until the Shanghai upgrade.

☐ **Goal of the token, where is value derived from?**

The value of stETH is derived first from the underlying ETH used to mint stETH and also from accrued daily ETH staking rewards

Conclusion

In conclusion, the due diligence conducted by Inverse Finance's Risk Working Group on stETH by Lido Finance has determined that stETH is a suitable collateral for the fixed-rate lending market, FiRM. Lido is a powerhouse in the liquid staking category with over \$7.5 Billion of assets staked across 5 chains, \$7.4 Billion of this being Ethereum stETH.

Risk measures have exceeded expectations, dozens of Audits from the point of inception for every contract instills great confidence in stETH and the Lido Team's ability. These audits are the front lines of preventative measures and bug bounties ensure the contracts are safe, secure and reliable over time. Lido offers \$2 Million in bug bounty rewards through Immunefi on each chain they service, totalling \$10M in rewards.

Apart from the de-peg fears amplified by bank runs on other crypto entities, stETH has remained a stable and pegged close to 1:1 with ETH leading up to the Shanghai upgrade set for end of March. We have confidence in the Lido team to deliver unstaking contracts proceeding the Shanghai Ethereum upgrade (One stETH = One ETH)

Overall, the Risk Working Group is satisfied with the findings of this due diligence report and is confident in the ability of stETH to serve as a reliable stable collateral on FiRM platform. Based on these findings, the Risk Working Group approves stETH as collateral on FiRM with an initial Collateral Factor (CF) of 70%. This figure matches the current CF for WETH on FiRM.

We are recommending the increase of Collateral Factor (CF) for the WETH market on FiRM from 70% to 75% at this time. This will ease the migration of WETH to stETH markets for users who choose to do so. As we move out of the "beta" phase of FiRM production Collateral Factors will be increased appropriately.

stETH Market Collateral Factor: 70%

WETH Market Collateral Factor: 75%