

# Overview

I, Michael Egorov, founder of Curve, requests the Arbitrum DAO to match my donation of 237'500 ARB tokens. The Total of 475'000 ARB tokens will support the launch of new Curve lending markets on Arbitrum One.

Curve lending introduces a unique feature called soft-liquidation. Instead of losing collateral below loan to value instantly, the position enters a soft-liquidation state. If the asset's price rebounds, the soft-liquidation is reversed, allowing users to retain their collateral.

When setting up a loan, users can customize their soft-liquidation range based on their own risk tolerance. Full liquidation of collateral only happens if the price falls below this predetermined range.

The goal of this proposal is to establish a deeply liquid borrowing and lending market for ARB tokens. The funds matched by the Arbitrum DAO will be used exclusively to bootstrap the supply side of the ARB markets.

Curve lending needs for the soft-liquidation deep curve pools, the ARB donated by Michael Egorov will be used to incentivize the crvUSD/CRV/ARB pool.

We see Arbitrum as a perfect place to start spinning up curve lending on L2. Regardless of the outcome of this proposal, Michael Egorov will use his ARB to incentivize curve on Arbitrum.

## SECTION 1: APPLICANT INFORMATION

### Applicant Name:

LlamaRisk

### Project Name:

Curve Finance

### Project Description:

Curve is a multichain AMM exchange that specializes in low slippage stablecoin swaps and concentrated liquidity provision. Curve distinguishes itself as the primary liquidity hub for some of the most exciting DeFi innovations, including stablecoins, Liquid Staking Tokens, and Real World Assets. In 2023 Curve has launched its own stablecoin, crvUSD, and now in 2024 is launching Curve Lending, an isolated lending market with soft-liquidation.

### Team Members and Roles:

Founded in 2021, LlamaRisk emerged as a trusted service provider to Curve and its liquidity providers, offering nuanced risk analysis for a spectrum of assets on Curve such as stablecoins, RWAs (Real World Assets) and LSTs (Liquid Staking Tokens). The diverse team encompasses experts from research, analysis, economics, data science, smart contract development, and legal fields. While operating independently, LlamaRisk is committed to further supporting Curve Lending through advanced simulation and meticulous risk monitoring services. The group boasts a collaborative history with both the Curve team and Curve DAO. LlamaRisk members successfully represented the DAO in securing other grants for Curve.

### Project Links:

- Curve Lending - <https://lend.curve.fi>
- Deep dive on curve lending: [A Primer on Curve Lending - LlamaRisk](#)
- Website - <https://www.curve.fi>
- Twitter - <https://twitter.com/CurveFinance>
- Telegram - <http://t.me/curvefi>
- Github - [Curve - GitHub](#)
- Documentation - [Understanding Lending - Curve Resources](#)

### Other persons involved

Michael Egorov is the founder and lead developer of Curve. He is the person behind curve stabelswap, crvUSD and lending. His latest invention is the algorithm for soft-liquidation which is used in crvUSD and Curve Lending.

Martin Krung is Curve core contributor and coordinates this grant request on behalf of Michael Egorov and LlamaRisk.

## Contact Information:

Twitter: <https://twitter.com/LlamaRisk>

Email: [info@llamarisk.com](mailto:info@llamarisk.com)

TG: [@martinkrung](https://t.me/martinkrung)

Twitter: <https://twitter.com/martinkrung>

Email: [mk@cryptonative.ch](mailto:mk@cryptonative.ch)

## Do You Acknowledge That Your Team Will Be Subject to a KYC Requirement?

LlamaRisk consents to mandatory KYC checks for the purpose of grant application.

## SECTION 2a: Product Information

### Curve lending

Curve lending introduces a unique feature called soft-liquidation. Instead of losing collateral below loan to value instantly, the position enters a soft-liquidation state. If the asset's price rebounds, the soft-liquidation is reversed, allowing users to retain their collateral.

When setting up a loan, users can customize their soft-liquidation range based on their own risk tolerance. Full liquidation of collateral only happens if the price falls below this predetermined range.

A deep dive how curve lending works: [A Primer on Curve Lending - LlamaRisk](#)

### How the Curve lending market for ARB will look like

Curve lending contracts are deployed on Arbitrum on 24.March 2024. Front-End is available since End of March.

### Market overview

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Screenshot at 2024-04-02 17-12-31

1266×366 104 KB

](<https://global.discourse-cdn.com/standard17/uploads/arbitrum1/original/2X/9/9fa36c8fadd35740f6dd139d0ac58a125aae36f7.png>)

Currently no Lending Market to Borrow crvUSD with ARB exists

### Loan creation with individual liquidation range

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Screenshot at 2024-04-02 17-14-15

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### Supply of Assets

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Screenshot at 2024-04-02 17-14-42

1272×561 153 KB

](<https://global.discourse-cdn.com/standard17/uploads/arbitrum1/original/2X/6/6fe6561fc0f95d2e7dbca6bbf3bfa62d0256e69b.png>)

## SECTION 2b: PROTOCOL DETAILS

### Is the Protocol Native to Arbitrum?

No, Curve is native to Ethereum and has deployed on 12 other chains and L2s. Arbitrum is the first L2 where the lending market is rolled out.

### On what other networks is the protocol deployed?

As per DefiLlama on March 22th, 2024:

Arbitrum

\$117m

Ethereum

\$2.29b

Polygon

\$25.66m

Celo

\$20.67m

Gnosis

\$10.76m

Optimism

\$6.41m

Avalanche

\$4.19m

Kava

\$3.02m

Base

\$2.93m

Fantom

\$2.14m

Moonbeam

\$107,677

Aurora

\$17,238

Source: [curve.fi](https://curve.fi) (Arbitrum Numbers) and <https://defillama.com/protocol/curve-finance>

### What date did you deploy on Arbitrum mainnet?

Curve, the AMM, has been deployed on September 12th, 2021

Curve lending has been deployed on March 24th, 2024

### Do you have a native token?

Yes, Curve DAO has CRV as native token which is, as veCRV a) governance token b) a fee sharing token. More details here: [Understanding CRV - Curve Resources](#)

## Past Incentivization

Curve DAO got 3,476,795 ARB from the initial distribution and is currently using this funds to incentivize some pools.

## Current Incentivization: How are you currently incentivizing your protocol?

1. veCRV owners vote on future CRV token emission on gauges
2. Some pool owners pay reward on the curve pools themself
3. ARB from a inital distribution are used to reward liquidity in pools [Curve.fi](#)

## Have you received a grant from the DAO, Foundation, or any Arbitrum ecosystem related program?

Only the initial distribution, see above.

## Protocol Performance:

As per DefiLlama on March 22th, 2024

TVL: \$2.444b

Cumulative Revenue: 298.01m

Cumulative Admin Fees Paid to LPs: \$142.93m

Cumulative Volume: \$133b (average \$228M/day)

Source: <https://defillama.com/protocol/curve-finance>

## Performance of Curve AMM Pools

A [report](#) by Delphi Digital released in July 2022 pulled data from every trade on the ETH/USDT pair on both Curve Tricrypto and Uniswap and simulated every trade on the opposite venue. It found that price quotes were better on Curve 65% of the time, although it only captured 35% of the volume. This was attributable to the higher gas cost of the more complex Curve pool.

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](<https://global.discourse-cdn.com/standard17/uploads/arbitrum1/original/2X/c/c058e5d8eb68eb8aa1aaf4cfffbc159dcb9530d3.png>)

When running the same test on Arbitrum, the “ideal” volume matched the actual volume much more closely, suggesting that Curve performs much better on a cheap gas platform like Arbitrum.

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Not only does Curve have the capacity to offer superior trade execution on L2s like Arbitrum, it offers a superior experience for LPs. Curve uses an internal price oracle and dynamic fees, only updating the price scale if losses from re-pegging are

made up for by at least half of the pool profits from fees. While the complex logic makes Curve V2 pools less competitive on mainnet, it is a truly automated market maker designed to protect LPs from erosion of their supplied value through impermanent loss.

## Protocol Roadmap

As an established protocol Curves roadmap is all about make things work better, improve the existing products and make integration more seamless. Better L2 integration and cross-chain crvUSD adoption is important for Curve.

Curve non-rehypothecation isolated lending markets are our first step, but lending markets with rehypothecation are a possible next one.

## Audit History & Security Vendors

Audits for Curve Lending have been done and findings integrated, but they are not yet public.

Curve lending is currently deployed on ethereum mainnet which shows our high confidence in the security of the code.

Curve has been heavily audited. The crvUSD protocol underwent a comprehensive audit by 3 separate audit firms before launch. Every upgrade to the Curve protocol involves audits as part of standard security practice.

A list of Curve audit reports can be found [here](#). Also, see a crvUSD specific audit by [Mixbytes](#).

We have a bug bounty program: [Curve.fi](#)

## Security Incidents

On July 30 2024 a vyper compile bug affected curve pools which have been compiled with the affected version. Part of the lost funds have been recovered, the rest has been paid back from the Curve DAO treasury.

Post Mortem Report: [Curve Pool Reentrancy Exploit Postmortem July 30th, 2023 - HackMD](#)

Recompensation post: [Proposal to Recompensate LPs Affected by Curve Pool Exploit - Proposals - Curve.fi Governance](#)

# SECTION 3: GRANT INFORMATION

## Requested Grant Size:

237'500 ARB

## Grant Matching

Michael Egorov will donated 237'500 ARB from his personal ownership to match the arbitrum grant. The source of these tokens are from early personal investment into Arbitrum.

## Grant Breakdown

The goal of this proposal is to establish a deeply liquid borrowing and lending market for ARB tokens. The funds matched by the Arbitrum DAO will be used exclusively to bootstrap the supply side in the two ARB markets:

Amount

Type

Market/Pool

Target TVL

190'000 ARB

Lending Market

Borrow ARB with crvUSD

\$10m

47'500 ARB

Lending Market

Borrow crvUSD with ARB

\$5m

237'500 ARB

AMM Pool

crvUSD/ARB/CRV pool

\$9m

475,000 ARB

\$19m

The ARB will be deployed to the market/pool rewards as a supply incentive and direct LP incentive.

Once funds have been received, we will work with the Curve core team to deploy the grant. Distribution will begin shortly after the necessary markets have been deployed.

## Funding Address

The Multisig Address controlled by LlamaRisk: [GnosisSafeProxy | Address 0xa6A7020B3276e86011a33638F3CD8fe02d5E4b61 | Arbiscan](#)

Micheal Egorov will send his donation of 237'500 ARB to the same address the day before the vote starts. The transaction will be posted in this proposal as well to update the community.

The ARB Grant will vest linearly over the 16 weeks — and the stream can be stopped at any time by the oversight committee.

## Funding Address Characteristics

2/3 Multisig with keys from LlamaRisk members: [Safe\(Wallet\) – Dashboard](#)

with this signers

0x0FB44352bcfe4c5A53a64Dd0faD9a41184A1D609

0x49cE85E1c55cb5b41b8Da2Db85826E3b63A47E00

0x462FcBb0581354263061e8dCF5e27C5B5E8Ce3b3

## Contract Address

As this is a private initiative of Micheal Egorov and for the best outcome complex transactions are needed, a standard multisig will be used.

## Justification for the size of the grant

The size of the grant is based on the ARB donation from my side.

The ~15 M TVL target for the lending markets and the 9 M TVL target for the related pool are a good size in this market environment. The target APY seems high, but in the current market with many opportunities, the incentivization is needed to attract capital in these lending markets. As we don't want to overpay, we adjust the amount of incentive every 2 weeks according to success to attract liquidity.

# SECTION 4: GRANT OBJECTIVES, EXECUTION AND MILESTONES

## Objectives

### Bootstrap ARB Curve Lending Markets

The goal of this proposal is to establish a deeply liquid borrow and lending market for ARB tokens. The novel soft-liquidation protects all users according to their risk appetite and helps to avoid liquidations.

Soft-liquidation allows users to set a liquidation level close to the market price and leads to a more capital efficient way of using collateral.

## Boosting Core Liquidity for ARB on Arbitrum

Soft-liquidation is done over arbitrage with liquidity venues for ARB on Arbitrum. A deep crvUSD/ARB liquidity pool on Curve allows it to work smooth. The low gas fee on Arbitrum allows for more efficient soft-liquidation, as the arbitrageur doing the soft-liquidation has less gas cost to cover than on mainnet.

## Sustaining Incentives with CRV Emissions

A short-term incentive program runs the risk of seeing mass liquidity outflows after incentives end. Our goal is to jumpstart ARB lending market. As the soft-liquidation is far superior to the hard liquidation used in other lending markets, we are convinced users keep using the lending market if the incentive is tapering off.

As we incentivize the supply side, the supply side earns lending reward from borrowers on top of the supply during bootstrapping and after bootstrapping.

veCRV stakeholders will be motivated to continue allocating CRV emissions toward lending markets even after the ARB incentives end. CRV's emission schedule lasts hundreds of years, giving Curve the means to incentivize liquidity on Arbitrum for years to come.

## Execution Strategy

### How the grant will be used

The funds matched by the Arbitrum DAO will be used exclusively to bootstrap the supply side in the two ARB markets. The funds from Micheal Egorov are used for the crvUSD/ARB/CRV pool.

Amount

Type

Market/Pool

Target TVL

190'000 ARB

Lending Market

Borrow crvUSD with ARB

\$10m

47'500 ARB

Lending Market

Borrow ARB with crvUSD

\$5m

237'500 ARB

AMM Pool

crvUSD/ARB/CRV pool

\$9m

475,000 ARB

\$19m

Fixed is the total amount of ARB.

Experience made on other incentivization programs taught us to adjust numbers during the program to achieve the best capital efficiencies.

On a similar program with Sturdy, an isolated lending market with shared liquidity, we have been running for crvUSD adoption, showed us that discovering new opportunity and products during a bull market needs time and over incentivization should be avoided.

It's good to start with high APY, but if attracted TVL stays low and APY high, then the amount ARB spend should be lowered

and rolled over to the next epoch. This is way epoch is set to 2 weeks, which results in adjustments made bi-weekly.

Another varying number in lending markets are how much native yield can be attracted, if curve lending markets are in demand and native yield is high, then less ARB can be spent and rolled over.

If after some time no usage of the market to borrow ARB with crvUSD is achieved, we shift to a target yield of 5% or less, to not over incentive idle capital.

The TVL attracted and the resulting APY will be determined by market sentiment and ARB price.

The minimal run time will be 16 weeks. Run time will be maximally extended to 20 weeks, if unnecessary high APY is achieved, the distribution rate will be decreases and funds last longer.

### **ARB from the Arbitrum DAO Grant**

The 237'500 ARB from the Arbitrum DAO Grant the supply Asset will be incentivized and help to establish a deep liquid ARB lending market with soft-liquidation.

Market

Incentive

Collateral

Borrowable

Supply Asset

Borrow crvUSD with ARB

190'000 ARB

ARB

crvUSD

crvUSD

Borrow ARB with crvUSD

47'500 ARB

crvUSD

ARB

ARB

### **Planed use of ARB in Curve Lending**

We suggest starting with the use of 4/5 of the ARB to attract crvUSD supply and 1/5 of the ARB to attract ARB supply. In the current market environment, there is more demand for leverage by depositing ARB as collateral and borrow crvUSD, than the opposite. Depending on the usage of these, the market's ratio may shift from epoch to epoch. If after some time no usage of the market to borrow ARB with crvUSD is achieved, we shift to a target yield of 5% or less to not over incentive idle capital.

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](https://global.discourse-cdn.com/standard17/uploads/arbitrum1/original/2X/4/415397967f38811e564e573c4fc3d86d2a6ef6f6.png)

Depending on the market situation at launch and each epoch, numbers may be adjusted over time.

Source of this screenshots:

[accounts.google.com](https://accounts.google.com)

[Google Sheets: Sign-in](#)



Access Google Sheets with a personal Google account or Google Workspace account (for business use).

## **Donated ARB from Michael Egorov**

The 237'500 ARB from Curve's founder will be used to incentivize and help to establish deep liquidity for the crvUSD/CRV/ARB pool. Incentivize need to be higher to offset possible impermanent loss.

Pool

Incentive

crvUSD/ARB/CRV

237'500 ARB

## **Planned use of ARB in liquidity pools**

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Depending on the market situation at launch and each epoch, numbers may be adjusted over time.

## **How will receiving a grant enable you to foster growth or innovation within the Arbitrum ecosystem?**

Curve is the backbone of the burgeoning DeFi industry. It touches every piece of the stack and strengthens every integrated protocol. There is an opportunity for Arbitrum to leverage Curve's foundational role to further support its vibrant ecosystem. Examples of how Curve spurs DeFi integration include:

- Soft-liquidation in Curve Lending markets is a feature many users are looking for.
- The stableswap algorithm, well known for enabling deep liquidity and low slippage swaps, has built a reputation for stabilizing pegs and enhancing stablecoin utility. (e.g. FRAX, 3CRV)
- Curve has a number of integrations with lending markets, yield-bearing derivatives, and real-world assets. Swap fees compound the interest generated from these activities. (e.g. Aave, stETH, STBT)
- Highly configurable V2 pools are unlocking new potential for FX markets and volatile crypto pairs. The concentrated liquidity algorithm offers advantages to LPs and traders, combining a composable AMM design with low-slippage swaps. (e.g. Tricrypto, eursusd)

## **How we achieve stickiness**

After bootstrapping curve lending markets, part of the supplied asset will be borrowed to users which pay a market rate. The achieved native yield depends on the market size and usage, and we expect this to be substantial to retain supplied assets after the incentivization period.

## **Our execution plan includes the following steps**

- Lending Market creation: ARB/crvUSD and crvUSD/ARB
- Pool Deployment, if needed.
- Incentive Campaign: Run incentives to the lending markets and Curve pool for 16-20 weeks, adjusted bi-weekly

## **Grant Timeline and Milestones**

The projected timeline is as follows:

- Lending Market creation: 1 week
- New pool, if needed: 1 week
- Incentives: Incentives will run for 16-20 weeks, adjusted bi-weekly

## Key Performance Indicators (KPIs):

To measure the success of this grant, we will use the following key performance indicators:

- TVL on the supply side in the two lending market
- Native yield earned on the supply side without incentivization
- Numbers of avoided hard-liquidation vs soft-liquidations
- Curve crvUSD/ARB pool TVL
- Liquidity utilization: Both overall pool volume and liquidity utilization in the crvUSD/ARB/CRV pool.

## SECTION 5: Data and Reporting

### Data Dashboard

Set range for a single curve lending positions can be seen over the lending page on curve, an aggregated view of all positions is also available. (See product screenshot above)

We have a dashboard for all things curve, soon we will have two person working full time on this. We will integrate the lending market and improve general data representation: <https://www.curvemonitor.com>

Lending market are integrated with [defillama.com](https://defillama.com/protocol/curve-llamalend): <https://defillama.com/protocol/curve-llamalend>

For crvUSD we have this dashboard: [Chaos Labs](#)

### Report during the grant

Numbers will be published in the forum after the bi-weekly adjustment.

### Final Report

A final report how the funds have been used will be provided in the forum and show how KPI have evolved.

## Request for Feedback

If you have questions or ideas how to improve this proposal, please comment.