



xBacked Litepaper

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Overview




xBacked is building Algorands first decentralized stablecoin; no central entity controls the issuance of xUSD and other tokens the xBacked protocol will build in the future. Building a decentralized stablecoin on Algorand makes a lot of sense. It is a PPoS Layer 1 protocol with instant finality, 4.5s block times and is moving to a decentralized governance model by the end of 2021. Their barrier to entry for running a node is also very low compared to Layer 1s like Solana.

No other blockchain ecosystem can offer these unique properties - which means we can build something unique.

Token Issuance

100M X Governance tokens will be minted.

Allocation

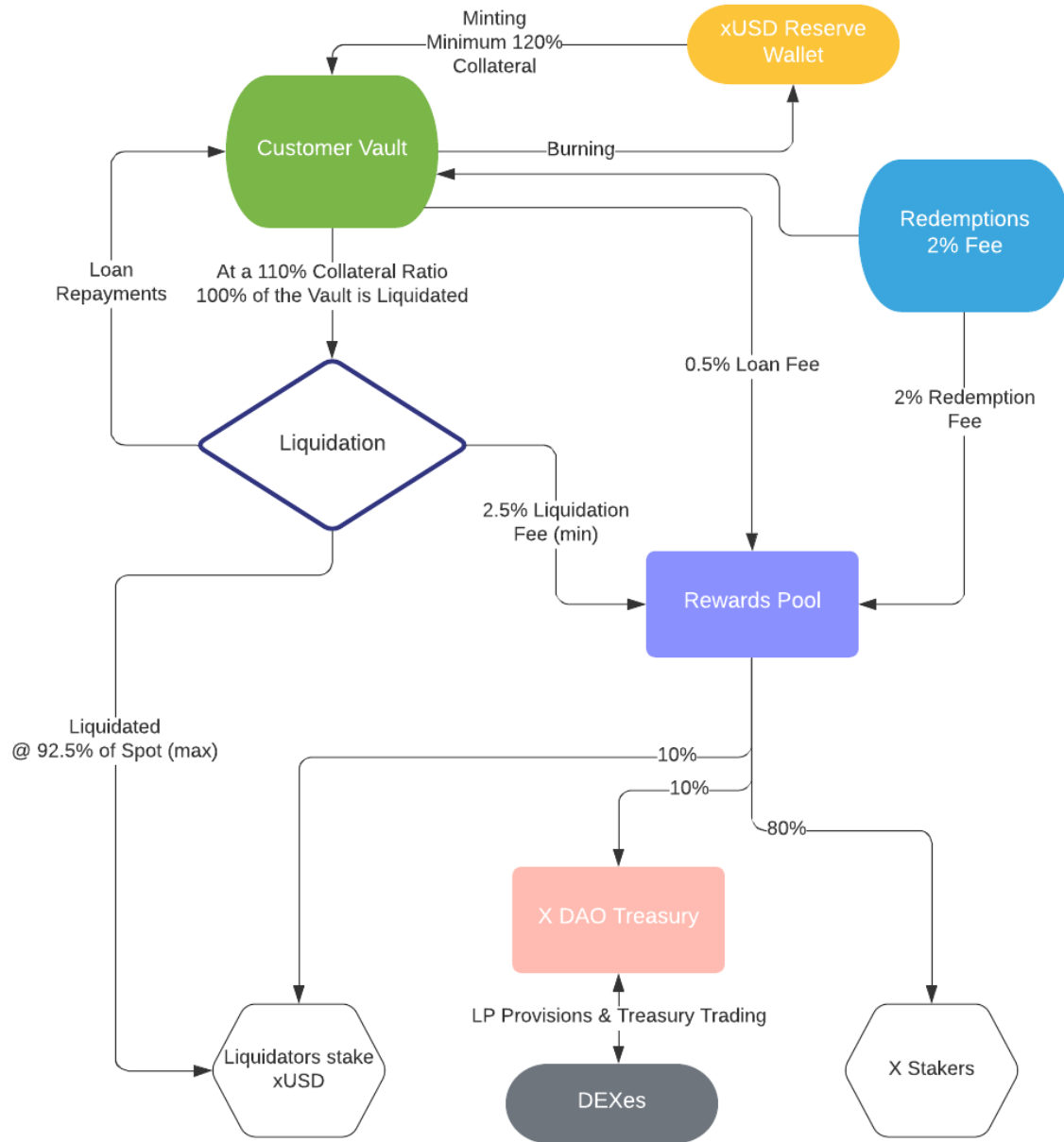
 Name	 % Allocation	 Vesting
<u>Community, Marketing & Growth</u>	53%	3-5 year distribution
<u>Core Contributors</u>	20%	3 years linear, can opt for longer lockup
<u>1st Seed Round</u>	10%	2 years linear, can opt for longer lockup
<u>Pre-seed Allocation</u>	5%	2 year linear vesting, can opt for longer lockup
<u>2nd Seed Round</u>	5%	2 years linear, can opt for longer lockup
<u>Advisors</u>	4%	3 year linear, can opt for longer lockup
<u>Initial Token Sale</u>	3%	
<u>Untitled</u>		

System Diagram



This is only for fiat pegs. If xBacked were to do something like the Float Protocol in the future, the mechanics would be different.

USD Only POC Peg



Core principle: the system uses xUSD to represent debt & fees, not dollars.

Example

Alice deposits \$100 USD worth of ALGO.
 Alice creates an xUSD loan of 50 tokens, and receives 49.75 xUSD worth \$49.75 USD
 0.25 has been taken as a fee for the protocol.

After fees, Alice still has \$100 USD worth of ALGO in her vault.
Alice must repay 49.75 xUSD tokens, regardless of the dollar value of xUSD.

Earnings

Earnings of the platform come in the form of fees, not interest (at least to begin with).

Fee Structure

- Liquidation fee: 2.5% minimum
 - Liquidators are able to choose their own discount rate for assets (minimum is 92.5%)
 - Incentive: keep a healthy c-ratio for your vault, otherwise be liquidated
- Redemption Fee: 2% of redemption amount
 - Incentive: discourage redemption in times of low market volatility
 - Also creates a floor to the xUSD price. Redemption will only make sense when xUSD is worth less than \$0.98 USD.
- Loan fee: 0.5% of loan amount
 - The user pays this from the xUSD they withdraw from the loan
 - DAO earnings: ensures the DAO is compensated up front for a loan.

Distribution of earnings in xUSD

- 80% to staked governance token holders
- 10% to DAO treasury
- 10% to Liquidators staking xUSD

Stability target: +/- 2% of \$1 USD.

Lending, Repayments & Withdrawal

Users of the xBacked smart contracts will be able to deposit collateral into a Vault. Vaults are smart contracts that are unique to a user, and the cost of deploying them is paid for by the user.

Vaults have a collateral ratio (c-ratio), and the system requires c-ratio to be 110%. As outlined in the Appendix, a Health Factor (HF) of 1 demonstrates this minimum required c-ratio. When the HF of an individual vault falls below 1, the entire vault becomes available for liquidation.

Vaults have the following limits

- Must be created with a 120% c-ratio.
- Cannot withdraw funds with a c-ratio less than 120%. This creates a strong incentive to repay debt so that the user can withdraw collateral.

When a user creates a loan for xUSD, they must pay a one-time fee of 0.5% of the loan amount.

Example

Alice has deposited \$100 USD worth of ALGO into a Vault.
Alice would like to initialise a 80 xUSD loan.
She is able to receive an xUSD loan of 79.6 tokens, paying a one-time 0.5% fee
This fee is 0.4 xUSD and her c-ratio is 125.6%

If the value of Alice's collateral drops to \$87.55 USD, her HF would be 0.99
With the HF under 1, the collateral becomes available for liquidation.

At any point, a user is able to withdraw their collateral, **as long as their c-ratio is above 120%**.

Example

Alice deposits \$100 USD worth of ALGO as collateral
She receives a xUSD loan of 49.75 tokens after paying a 0.5% fee.
With this loan, her Vault c-ratio is 201%.
Alice is able to withdraw up to \$40.3 USD worth of her ALGO, leaving \$59.7 in collateral, and the CR is 120%

Furthermore, if the collateral value increases, Alice could either withdraw the asset or create more loans.

Example

Alice deposits \$100 USD worth of ALGO as collateral
She receives a xUSD loan of 49.75 tokens after paying the 0.5% fee.
With this loan, her Vault c-ratio is 201%, and the HF is 1.81
Alice is able to withdraw up to \$40.3 USD worth of her ALGO.

The price of ALGO goes up, and Alice's collateral is now worth \$120 USD.
The c-ratio is 241%, and HF is 2.17.

Alice could now withdraw an extra \$60.3 USD worth of her ALGO, or she could create another loan worth \$58.25 USD - 0.5% fee (57.95 xUSD).

When repaying a debt, the user must do so in-kind with the loaned asset. As the platform currently offers xUSD for all loans, all users must repay with xUSD. Over time, the protocol may add additional loan assets such as USDC. There is no fee for repaying a debt.

Example

Alice deposits \$100 USD worth of ALGO as collateral
She receives a xUSD loan of 49.75 tokens and pays the one time fee
With this loan, her Vault c-ratio is 201%

Alice comes back a month later, and still has a debt of 49.75 xUSD.
In this time she has bought more xUSD from Liquidity Pools and now has a balance of 100 xUSD in her wallet.
Alice uses 49.75 xUSD to repay her debt.

Alice now has no xUSD debt outstanding, and has \$100 USD worth of ALGO in her vault and 51.25 xUSD in her wallet.

Liquidation

As stated before, Vaults will have a Health Factor (HF) that represents the collateral ratio (c-ratio), where an HF of 1 is equal to the minimum c-ratio of 110%. If an individual Vault drops below an HF of 1, the entire Vault becomes available for liquidation.

How do Liquidations work?

xBacked will rely on xUSD staked by Liquidators to perform liquidations. Liquidators stake xUSD and receive a pro-rata share of 10% of all platform earnings. This staked xUSD is then used to liquidate risky vaults. Over time, this results in xUSD participants stake being swapped for ALGO at the specified discount. Initially, the xBacked protocol will perform these liquidations, and in the future the protocol may also support liquidations by external actors.

Liquidators will be able to set a discount rate that they are happy to pay for liquidated assets. The maximum for this will be 92.5%, with a minimum of 2.5% being returned to the protocol. This creates a dealer market, and incentivizes more sophisticated market participants to make a market.

xBacked will reward the liquidators with the most favorable discount to the platform (e.g. 99.9%). This incentivizes liquidators to provide a favorable rate to the protocol.

This liquidation model favors liquidators over borrowers, a preference that supports initial stability of the xBacked protocol.

Example

```
Alice stakes 200 xUSD, and sets her discount rate at 95%

Bob's vault hits a c-ratio of 109%, and his $100 worth of ALGO is now available
for liquidation. Bob's debt is 91 xUSD.

Alice pays 95 xUSD and receives $100 worth of ALGO.
Alice now has 105 xUSD and $100 worth of ALGO.
Alice sells $100 worth of ALGO on a DEX and receives 100 xUSD.
Alice now has 205 xUSD.

Bob's debt of 91 xUSD is paid, and 4 xUSD is distributed to the protocol
reward pool.
```

Redemption

Redemption is a separate mechanism to withdrawal. Redemption **guarantees** that 1 xUSD token can be redeemed for \$1 USD of underlying collateral from the **riskiest vault(s)** in the system. The fee for this mechanism is 2%. This redemption mechanism creates a hard peg, and a floor to the xUSD price.

This redemption feature also creates a strong incentive for users to ensure their vault has a healthy c-ratio, as the riskiest vaults will experience the highest risk of redemption..

Example

```
Alice has 100 xUSD that are worth $97.
Alice redeems all of her xUSD tokens, paying 2 xUSD as the fee (2%).
Alice receives $98 USD worth of ALGO.
```

Alternatively in this scenario, Alice is able to buy undervalued xUSD to repay her loan at a cheaper rate.

Important to note: this only becomes worthwhile once xUSD is worth less than \$0.98.

Staking

Users of the xBacked smart contracts are able to stake the xBacked governance token for a pro-rata share in the earnings of the platform. Simply holding governance tokens will not accrue earnings.

Earnings are distributed once per month.

Example

Alice stakes 10 of her governance tokens, totaling \$100 USD.
The platform has 1,000 staked governance tokens, totaling \$10k USD.

Alice has a 1% share of the staked governance tokens.

Over the next month, xBacked generates \$10k in fees. \$8000 of this is distributed to staked governance token holders.

Alice receives a pro-rata share in the earnings of the xBacked platform.
She receives \$80 xUSD for staking.

Governance

Governance tokens must be staked for at least 1 month prior to voting, and staked for at least 1 month to receive an earnings distribution.

This incentivizes people to stake for the long term; and discourages people buying up governance tokens to vote or create proposals in a short term way.

Debt Oversupply

In the event there is an oversupply of debt in the system, the peg will be under the target of \$1 USD. To counteract this, there are several controls in place. Protocol c-ratio in this scenario will be less than 110% target. At this point, vaults will be liquidated but there are other forces too.

Arbitrage

People are able to repay their xUSD loans at a reduced rate, contracting the supply of debt in the system. At the same time, people would be able to take advantage of arbitrage opportunities presented on exchanges.

Example

Alice as a debt of 100 xUSD, which was worth \$100 USD at the time
Alice sees the price of xUSD is \$0.9 USD.
Alice buys 100 xUSD on a DEX for \$90
Alice repays her loan for \$10 less than the original amount.

Staked Governance Backstop



May not be included in V1

In a severe case, Staked Governance tokens will be used to maintain the peg. In this scenario, staked governance tokens will be used to pay off system debt. Stakers are compensated for this risk with the 80% earnings distribution to them. This is only done when there is **not enough collateral in the system**.

Example

Alice has staked 10 governance tokens, worth \$10 each for a total value of \$100
Alice has received a share in the earnings of xBacked over time, and has earned \$50 xUSD.
The xUSD peg has broken and xUSD is under the \$1 USD target.
A portion of Alice's staked governance tokens have been sold to repay system debt.

This would require LPs for X/xUSD.

Redemption

It is in this kind of scenario where users will likely use the redemption functionality more than they usually would. This is explained in detail above.

Debt Shortage

In the event that there is a shortage of debt in the system, the peg will be over the target of \$1 USD. To counter this, the system will partially liquidate risky vaults, until the system achieves a healthy c-ratio.

Market participants will also take advantage of this arbitrage opportunity. They will get a loan in xUSD, and then sell this xUSD for a profit in a DEX.

Example

Alice sees that xUSD price is currently \$1.10
Alice creates a loan of 100 xUSD, worth \$110 instead of \$100.
Alice sells this on a DEX for a profit.

Appendix

Why xUSD is not DAI

In 2020, the DAI peg broke due to a multitude of reasons, the largest of which is that the system became congested & transaction fees soared. This prevented users from paying off debt, and prevented Keepers participating in auctions in a timely manner. Algorand does not have these problems, but the Oracles might...

Further, xBacked has a redemption functionality built in. **This promises that 1 xUSD can always be exchanged for \$1 USD worth of collateral.** This creates a floor to the price, and is a much stronger mechanism than interest rates.

Competitor Comparisons

xBacked vs Maker DAO

Maker DAO built the DAI stablecoin for the Ethereum ecosystem. Maker's architecture was designed within a set of constraints that Algorand simply does not have.

These major constraints are:

- High transaction fees
- Network congestion
- Front running

On Algorand, transaction fees are 0.001 ALGO, and the network can scale up to 46,000 transactions per second, while maintaining instant finality.

Core differences in protocol design

xBacked has

- 0% interest, and instead uses fees
- 110% collateral ratio: not 150%
- Does not rely on external keepers [yet] - this is our own constraint, due to the maturity of the Algorand ecosystem. It is better we are more self contained
- Redemption: we ensure users of the protocol are always able to redeem 1 xUSD for \$1 of underlying collateral
- Liquidations: people stake xUSD to act as liquidators, and set their own discount rate. Liquidators with a lower discount rate are preferred as that is more beneficial for all participants in the protocol.

Similarities

- Eventually, governance token stakers may be used as a backstop for the system
- Both operate as DAOs
- Both are pegged to the US Dollar using over collateralization of debt

xBacked vs FRAX & other algorithmic stablecoins

Frax is a very unique protocol; instead of being fully collateralized they are under collateralized and use algorithms to maintain their peg. xBacked **is not an algorithmic stablecoin** but instead over collateralized at all times.

Other stablecoin projects are backed by nothing and rely purely on Algorithms to maintain stability (see ESD & IRON)

Core differences in protocol design

xBacked has

- Over collateralized debt to ensure stability
- Minimal use of algorithms to maintain a peg

xBacked vs Olympus

Olympus is not building a stablecoin; they are building a token that is **backed** by an underlying basket of assets, but it is not **pegged** to a certain price. The goal of the project is that their PHM tokens maintain purchasing power over time for the **ecosystem** not necessarily in fiat.

For example, 100 OHM tokens now should be able to buy the same amount as 1000 OHM tokens in the future.

Core differences in protocol design

xBacked assets will be pegged to fiat currency values.

Variable Definitions

Liquidation Threshold (LT): The amount of the collateral that can be borrowed against. xBacked has this set at 90% (for a healthy c-ratio target of 110%)

Liquidation Spread (LS): The discount on the asset being liquidated. xBacked Liquidators set their own discount rate between 92.5% and 99.9%

Close Factor (CF): The maximum proportion of the debt allowed to be repaid in a liquidation. xBacked has this set at 100%.

Minimum Withdrawal CR = 120%

$$\text{Collateralization Ratio (CR)} = \frac{\sum \text{Value of Collateral}}{\sum \text{Value of Debt}}$$

$$\text{Borrowing Capacity (BC)} = \sum \text{Value of Collateral} \times \text{Liquidation Threshold}$$

$$\text{Maximum Loan Amount} = BC - \text{Value of Debt}$$

$$\text{Health Factor (HF)} = \frac{BC}{\sum \text{Value of Debt}}$$

$$\text{Maximum Withdrawal} = \text{Collateral} - (\text{Value of debt} \times \text{Minimum Withdrawal CR})$$

$$\text{Value of Collateral to Claim} = \text{Value of Debt to repay} \times (1 - LS)$$