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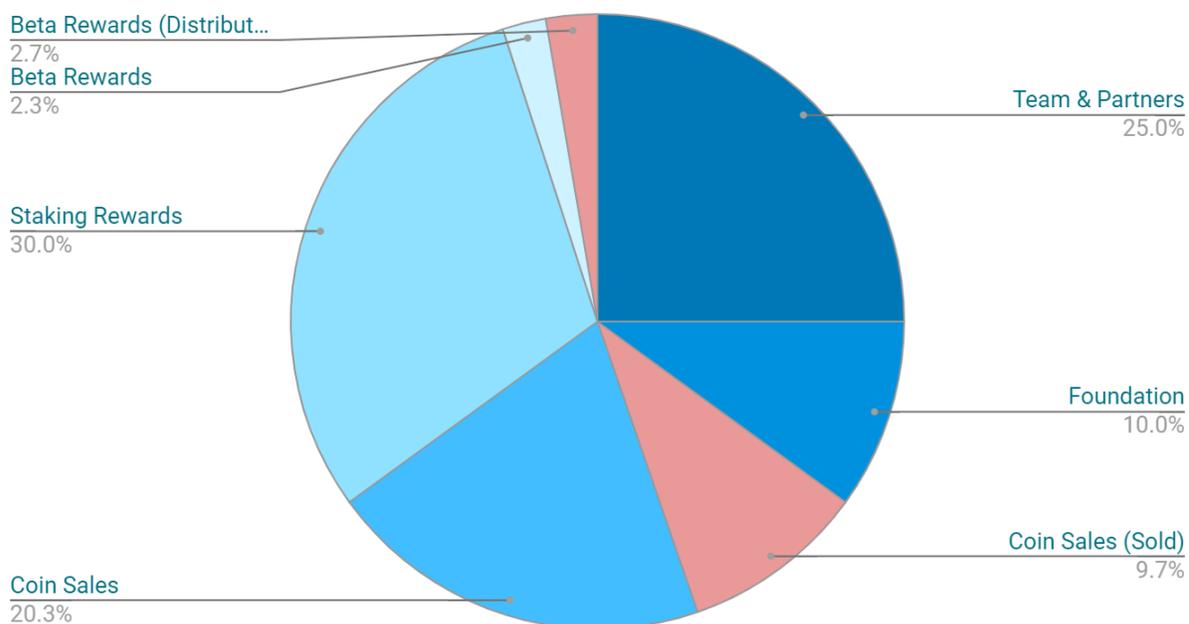
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# Coin Allocation

At the beginning of MainNet, the total supply of minted xx coins will be 1 billion. These coins are allocated according to the following pie chart:



## BetaNet Rewards 5%

Coins allocated for BetaNet node operators and community airdrops. BetaNet nodes are currently receiving 7,000 xx coin each per month during the duration of BetaNet.

## Staking Rewards 30%

Coins allocated to heavily incentivize users to stake in early MainNet. These coins will be algorithmically distributed to stakers in the network with the vast majority of them being distributed in the first year (see the Staking Rewards section below for detailed information). Coins earned from this allocation have no lockup or vesting but will be subject to a 28 day unbonding period when they are unstaked.

## Coin Sales 30%

Coins allocated for public and private sales. All tokens purchased during BetaNet, and before, have had a 1-year lockup period. Any tokens unsold or not committed to any option pool after the final public sale will be re-allocated towards community incentives (70%) and the Foundation (30%).

Participants in new sales may have a vesting period which releases linearly beginning at MainNet. The details of such periods will be within their individual purchasing agreements.



## Team 25% (3-year vest)

Coins allocated for the creators of the project. Team coins will vest linearly over 3 years. 10% of these will be stakeable for rewards at MainNet with the remaining ineligible for rewards until vested. Some team coins will be used initially to stake members of the BetaNet node community. You can read more about this in the [MainNet Transition announcement](#).

## Foundation 10% (20% initial vest, 3-year vesting for remaining 80%)

Coins allocated to grow the xx network ecosystem via partnerships, marketing and promotion, additional exchange listings and distribution, dApp development and events. 20% of these will be unlocked at MainNet with the remaining vesting over 3 years.

## Roles

The xx network will use nominated staking to incentivize all coin holders to participate in node selection, operation, bonding, and governance.

There are four primary ways to contribute to the xx network and earn xx coins, each with a different set of requirements:

1. Bond xx coin and nominate an active node
2. Run an active node
3. Provide liquidity to a recognized swap platform's liquidity pool
4. Contribute to the codebase or community development

## Nominator

Nominators stake xx coins in order to vote on governance proposals and nominate nodes in the network. Nominators earn interest on the tokens they have [staked](#) on active nodes every "era" according to an [interest rate curve](#) and the specific commission and performance of the node. The length of an era will likely be 24 hours at MainNet.

Being a nominator requires careful consideration as any misbehavior by a node may result in [slashing](#) of the node's and nominators' xx coins.

## Active Node

To become a node operator in MainNet, an individual will need to deploy and sync a node with the network, [stake](#) coins, and then attract nominations and stake from the community. Details of this process can be found in the [Node Handbook section](#) of the xx wiki. If a node gathers enough stake, it will become an active node, participating in consensus and generating block rewards according to the interest schedule detailed in the Era Rewards *section*.

Every era (currently 24 hours), a new set of active nodes is chosen and the previous set of active nodes (and their nominators) are awarded staking rewards. The xx network plans to have **550**



**active nodes** via an election in which the nodes with the most stake from themselves and the community are chosen to be active. The network will launch with 425 nodes, expanding to 550 shortly after. The maximum number of validators may be changed with community governance.

Node operators stake their own xx coins and attract nominations from the community in order to gain enough stake to become an active node. Active nodes may be compensated through 3 channels:

- interest on their staked coins according to an interest rate curve and the performance of their node;
- a fixed percentage commission of all coins earned by the node in the era; and
- a portion of [transaction fees](#) from blocks they author.

It is important to note that running a node is a significant commitment and while the rewards can be high, misbehavior (intentional or otherwise) will be penalized by slashing some or all of a node's (and any related nominators') stake.

## Liquidity Provider

Liquidity depth in decentralized swap platforms is important for the decentralization of the network, allowing users to trade in or out of xx coin while ensuring stability in the relative value of the coin. We have pre-allocated a fixed number of xx coins which will be used to provide high interest rates to coin holders who participate in a liquidity pool during the first year. Unlike staking incentives, liquidity incentives do not require a user to bond their coins in the network. More information can be found in the [Liquidity](#) provider section.

## Code and Community Contributor

The xx network will grow post-MainNet through the contributions of the community in the form of writing code, creating dApps, developing educational materials, and participating in Governance. The treasury's main purpose is to fund bounties and rewards for these activities as proposed by the council, tech committee, or community at large. More information will be available when governance goes live.

## Nominated Staking

### Bonding and Nominating

In order to stake or nominate a node in the xx network, you will be required to first bond the coins you wish to stake. While bonded, these coins will not be transferable but may be used for staking and governance. Staking and governance are considered separate actions and both may be done at the same time with the same locked coins. For example, if you have 1,000 xx coins staked, nominating several nodes, you may use those same xx coins to vote on referenda, elect council members, and propose treasury spending without unstaking the nodes.



## Slashing

Staked coins are one way the community secures the xx network and when nodes disrupt the network either intentionally or unintentionally, they risk losing some of their own xx coins and the xx coins of the people who have nominated them. This penalty, called **slashing**, is a disincentive for node operators to run faulty or insecure nodes in the best case and prevent coordinated attacks on the network in the worst case. Slashing should be taken seriously by both nominators and node operators and is the reason carefully choosing the nodes you stake on is important.

There are 4 planned levels of offences that are punishable:

- 1) If a node stops communicating with the network for an epoch (4 hours), it is removed from the active validator set and taken out of the next election. By itself, this generally does not result in a direct slashing of xx coins but will result in losing any era rewards that would have been earned and as a result, nominators may abandon the node.
- 2) If a large percentage of nodes (currently 10%) go offline together then it is considered a coordinated attack and a small amount of xx coin is slashed from the nominators and node operator of the offenders. The slashed percentage grows linearly until the percentage of offline nodes reaches 17%, at which point a new era is started immediately.
- 3) If a single node equivocates during a round (produces two different blocks in the same round or votes for two different chains in the same round), a very small amount (minimum 1%) of xx coin is slashed from the nominators and node operator of the offender.
- 4) Misconduct that doesn't excessively threaten the network and is unlikely to be accidental results in a small amount of xx coins being slashed and the node taken offline.
- 5) Any offences that threaten the security or economics of the network will result in most or all of the xx coins being slashed and the node taken offline. These offences include mass collusion and mass equivocation.

## Unbonding

When a user wishes to unbond all or some of their coins so that they may transfer them, there is a 28-day cooldown period until the coins may be used. During this period the coins will not earn interest and will not be counted towards your active stake. A user may rebond the coins at any time during this period and begin using them for staking again. This period ensures that the coins are available for slashing if a prior offence is caught within the 28-day unbonding period.



# Era Rewards

## Interest and Inflation

The primary mechanism for incentivizing nominators and node operators is a pool of xx coins that is allocated every era (24 hours). The size of this allocation is determined by a rewards schedule that takes into account the number of coins staked into the network (ideal staking ratio) and an ideal interest rate curve.

## Ideal Staking Ratio

The ideal staking ratio is a network parameter which defines the ideal percentage of stakeable coins that should be staked in the network. The ideal staking ratio represents a balance between coins available for liquidity and the security of the network underpinned by staking. This ratio is expected to change as the use of the network grows to allow for increased liquidity to support the use of various dApps and network features. While the network is expected to launch with a 65% target staking rate, any changes to the staking rate may be proposed and voted on at any time through Governance. To illustrate we project a few potential economic phases of the network with different staking ratios:

- Decentralized MainNet – 65% staked
- Universal atomic swap launch – 60% staked
- MPC/Smart Contracts launch – 50% staked

Stakeable coins are the coins which have been minted and can be staked for interest. There are several coins that are minted in the genesis block, which may not be immediately staked for interest including: the staking rewards allocation, 90% of the team allocation, and the unvested Foundation allocation. As the lockups on these pools release over time, the number of stakeable coins in the network will rise.

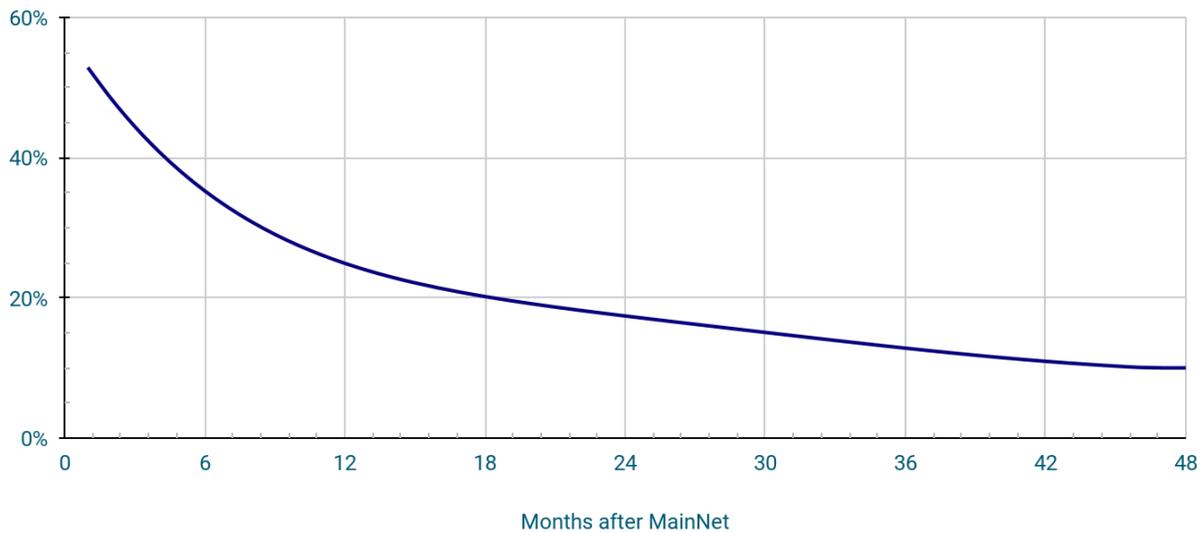
As an example, if there are 500,000,000 stakeable xx coins in the network and the ideal staking ratio is 50%, then the network will have reached ideal staking if 250,000,000 xx coins are being staked on nodes. The actual percentage of coins which are staked on nodes will determine the interest rate earned as will be described in the following sections.

## Ideal Interest Rate

The ideal interest rate curve represents the returns (expressed in annual interest rate) a node can expect to earn if they are staked in a certain block and the actual staking ratio is equal to the ideal staking ratio as described in the previous section. This curve is subject to modification prior to MainNet. As will be described in the next section, the actual interest rate will be higher than this curve if the actual staking ratio is lower than ideal, and vice versa if the actual staking ratio is higher than ideal.



## Staking Interest (annual yield)

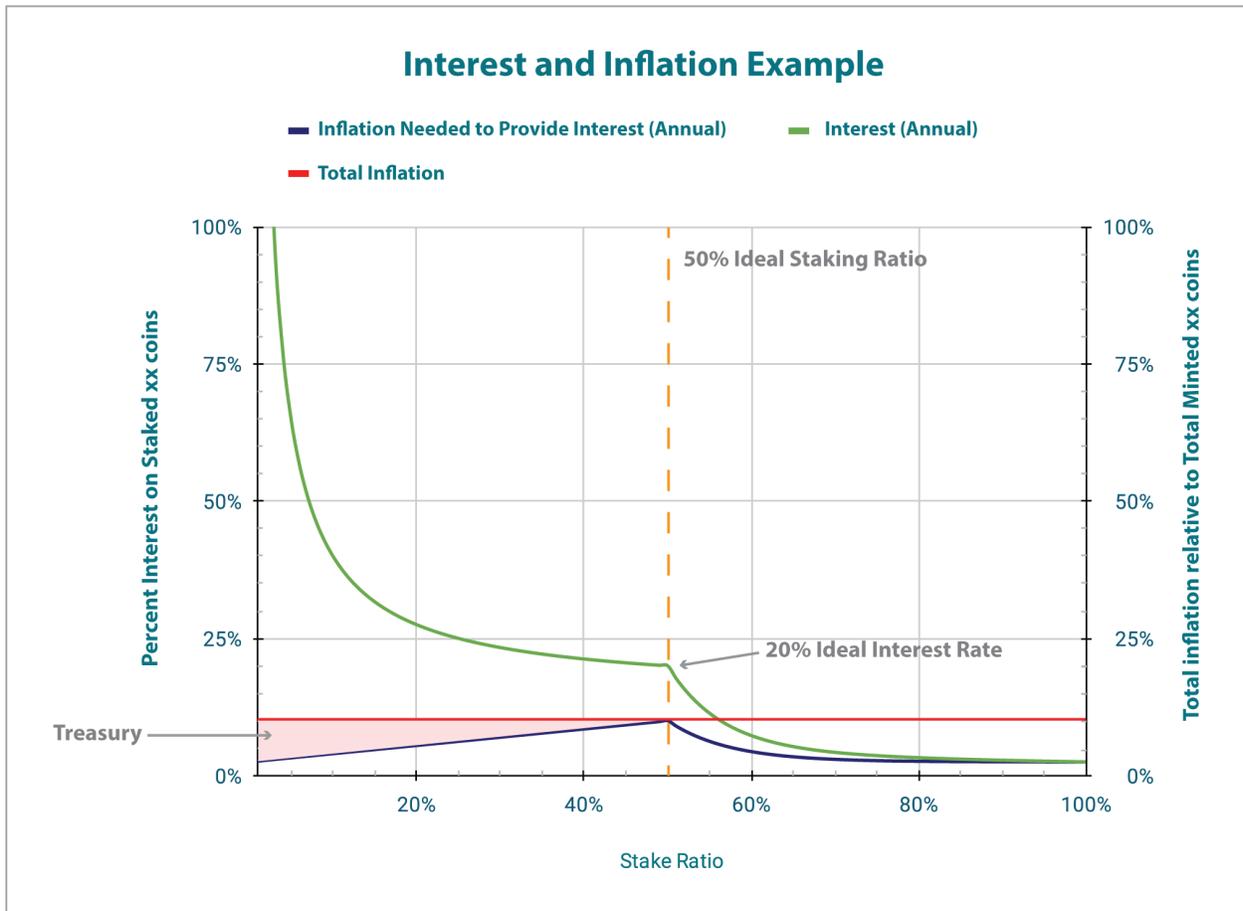


The interest rate curve is designed to provide high returns in the first year to heavily incentivize staking and stability. As the network matures, the returns will taper down to about 10% interest to prevent heavy inflation. At this point, transaction fees are expected to provide substantial revenue to subsidize the interest rate.

## Actual Interest Rate and Era Allocation

As described in the previous sections, the ideal interest rate curve represents the interest rate when the network's actual staking ratio is exactly equal to the ideal staking ratio. In reality, the actual staking ratio is going to be lower or higher than ideal. If it is lower than ideal then the network should provide extra incentive for people to stake more coins. Likewise, if it is higher than ideal then the network should limit incentives to dissuade overstaking. This behavior is captured by the example curve below which shows an example scenario on the ideal interest rate curve (see previous section) where the ideal interest rate is 20% and the ideal staking ratio is set to 50%.





The ideal interest rate can be seen at the sharp edge of the curve above the 50% stake ratio on the x-axis. As described above, interest rates are higher when the staking ratio is below 50% and drop dramatically when the staking ratio is above 50%.

The graph above has a line labeled “Inflation Needed to Provide Interest” which refers to the number of coins allocated for the era which are needed to provide the given interest rate. You can see that this curve reaches a peak of 10% at the ideal staking ratio of 50%. This percentage is expressed as annual inflation for ease of understanding to demonstrate what the inflation might be if this curve held for a full year. For the first approximately five years, these coins will come from the staking rewards allocation and so there will be no inflation. When this pool is emptied, the era allocation will be minted, causing limited inflation.

Every era, regardless of the actual staking ratio, the ideal era allocation is created (10% in the graph above, shown by the red line). If the actual staking ratio is above or below the ideal staking ratio, you will see that there will be coins left over as the blue curve is below 10%. These additional coins will be moved to the treasury where they can be used by governance, or burned at the rate of 1%, every 24 days.

### Era Points

The token economics of node operation are designed to encourage participation by all nodes and to maximize the security and privacy properties of the network.



The general principle is that for every operation a node completes they are awarded points which are aggregated across an era. At the end of the era, the allocated rewards are distributed to the nodes based on their proportion of the total points earned.

Nodes will be awarded points for the following tasks:

- Points for authoring a block: 1000 points
- Per completed cMix round: 10 points
- Per failed cMix realtime round: -20 points

It is important to note that cMix operations are generally much more frequent than block authoring. In general, a block is produced every 6 seconds, while every second, depending on the network size, anywhere from 3 to 8 rounds will complete, with the expected starting rate in MainNet at 4.5 rounds per second. Given these constraints, it is expected that the ratio of cMix Points to blockchain points will be 60:40.

In order to combat the potential centralization of nodes in a specific region to reduce latency, before adding cMix Points to the pool, multipliers will be added to round points based upon the higher multiplier of any member of the team. This will help ensure that all nodes have strong incentivization to participate in teams with diverse geographic profiles.

The regions, known as geographic Bins as well as their multipliers, will be determined based upon performance data from the ProtoNet.

The council will review these multipliers and regions on a monthly basis to ensure that the network is appropriately incentivizing all jurisdictions to participate.

## Commission

Each active node in the network sets their own commission rate for their node. This rate determines what percentage of the nodes' share of each era's allocation pool of coins goes to the node with the remainder split between the nodes' nominators. For example, if there are 100 active nodes in the network who each earn the same number of era points, then each node's validator pool will receive 1/100 or 1% of the minted xx coin for the era. If a node has 5% commission, then the node will receive 5% of that 1% (.0005% total) with the remaining 95% (0.0095%) being split between the stakers of the node proportional to their stake. Choosing a low commission will likely attract more nominators from the community to stake on a particular node but will result in less interest going to that node runner.

## Block Rewards

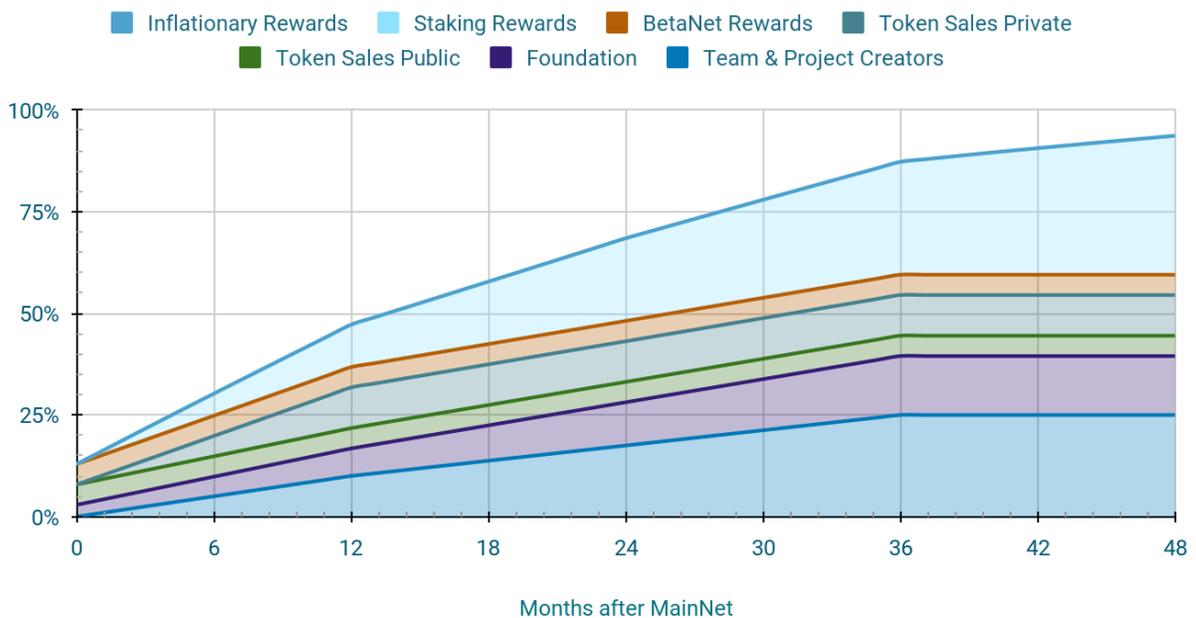
The transaction fees from any transactions in a block are split 20:80 between the node which authors the block and the treasury. This gives the node operator some incentive to gather transactions before proposing a block while ensuring that some percentage of transaction fees make it to the treasury where they may be used by governance or eventually burned.



## Circulating Supply

The circulating supply of the network will be relatively low at MainNet launch as many tokens held by the team and private investors are locked and vesting, and the staking incentives allocation will not have been distributed. With the current economic model, the network is not expected to experience any inflation for the first five years. The curve below shows an example of what the first four years might look like in a worst case scenario with no deflationary burning. In reality, coins that go to the treasury from block rewards and from non-ideal staking will be burned periodically.

### Circulating Supply as Percentage of Initial Minted Coins



As can be seen in the graph above, the Staking Rewards are expected to last for longer than the four year period of the graph. As a result, Inflationary Rewards are not shown.

## Vesting Coins

The coin allocation section describes a number of coins that will begin vesting at MainNet. Vesting coins will be released on a block-by-block basis over the period defined in the genesis block. Any coins that have not vested may not be transferred to any other wallet but may be used to participate in staking and governance.



# Postage and Transaction Fees

## Transaction Fees

Like all blockchains, the xx network will use transaction fees to manage the limited resources of the blockchain. These fees are calculated based on the amount of computational and storage resources required to process a transaction. At MainNet launch, the network will be limited to native transaction types with small, predictable fees. Eventually, the network aims to include a smart contract protocol with Multiparty Computations (MPC) capabilities which will likely use a separate fee structure to incentivize smart contract workers.

As previously mentioned, transaction fees from each block will be split between the active node who authors the block (20% of the fees) and the treasury (80% of the fees).

## Postage

The xx network utilizes a unique decentralized mix network to facilitate private communication and packet transfer and which serves as a foundation for eventual MPC functionality. In the early network, users will be able to use the mix network in a limited manner without paying any fees, allowing dApps like the xx messenger the ability to attract users to the platform. Users and applications which require heavy throughput of the mix network will need to purchase postage accounts by spending or staking xx coins. These accounts will be based on a leaky bucket approach which limits the number of messages that can be sent in quick succession based on the tier of account that is purchased or staked.

The mix network resources, unlike other blockchain resources, increases as more mix nodes are added to the network. As more mix network resources are used and more postage is paid for, the network can afford to add more mix nodes, allowing the network to scale to usage requirements.

## BetaNet Staking

In March of 2021 the team announced a program to automatically enroll all coin holders into a staking program from that point until MainNet. This program is designed to have up to a 50% APY (3.437% compounded monthly) for purchasers in the public coin sales and all BetaNet Node Operators. For BetaNet Node operators, this program applies to both coins received before and after March 2021, but those received after only receive interest from the point they are received.

There are four options to receive accrued staking interest. Coin holders who volunteer for longer vesting periods, will receive higher interest rates. This incentivizes stability in the network which benefits all coin holders.

Coin holders will use the Ethereum wallet which holds the ERC1404 xx coin they purchased (or received during BetaNet) to sign an intent and submit it to the team before MainNet Launch. Details on these submissions will be published soon.



The four planned options will be:

- 9-month vest for 100% of the principal and receive 120% of BetaNet Staking Reward
- 6-month vest for 80% of principal and receive 100% of BetaNet Staking Reward. This is the default if no selection is made.
- 3-month vest for 90% of principal and receive 45% of BetaNet Staking Reward
- 1-month vest for 100% of principal and receive 12% of BetaNet Staking Reward
- No vest and receive 2% of BetaNet Staking Reward over 6 months

Coins locked in a vest cannot be traded, but they can be staked for rewards and used for network governance. They become unvested at a linear rate every block over the lifetime of the vest.

The BetaNet Staking Reward will be vested over the same period as the principal vest.

