JOE Token Staking V2

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TLDR

We introduce new JOE token staking designed to offer different benefits for a variety of users.

- Stake JOE to sJOE and receive platform revenue share, in USD stables.
- Stake JOE to rJOE and receive allocation credit for new token launches.
- Stake JOE to veJOE and receive farm boost (up to 2.5X) in selected farms.
- veJOE get voting power for future governance
- xJOE will be deprecated
    - Or we keep it for JOE stakers to earn more JOE via emissions

Hypothesis

- **Modular Design:** By offering separate staking pools with different benefits, we can increase our number of stakers by appealing to more user groups.
- **Claim rewards without unstaking:** By allowing users to claim reward benefits without having to unstake we can improve staking retention.
- **Incentivize yield farmers:** By allowing users to boost farm yields, we create competition among yield farmers to increase staking.

veJOE: Boost your farming rewards

Gain more JOE without locking or fees

vePTP was well received for its incentivizing yield farmers to stake to receive more emissions. Although this mechanism distributes more emissions towards large mercenary yield farmers, it would be an improvement for current JOE tokenomics in following ways:

1. Encourages yield farmers and yield aggregators to stake some JOE to optimize farming returns.
2. Cap and boost warm-ups shift distribution towards longer-term stakers, adding time friction for reward selling.
3. Rewards loyal JOE stakers by boosting their yield farming returns.

Staking

We propose the following:

- *JOE* holders can stake *JOE* to the *veJOE* vault, and claim *veJOE* tokens in real time, similar to a yield farm.
    - Receive *veJOE* tokens at a fixed generation rate, up to a cap of 100X their *JOE* staked.
    - *veJOE* generation rate may be boosted +100% for 15 days, by depositing 5% of staked JOE balance
- *veJOE* is non-transferrable, only burn and minting are allowed.
- *veJOE* holders may unstake JOE any time, but loses all *veJOE*.

In the future, *veJOE* holders would be conferred voting escrow rights, for governance of a specific budget and scope:

- A specified budget, e.g. 30% of farm emissions
- Allocation of the budget to be shared among AVAX-Stablecoin liquidity pools only, e.g. AVAX-USDC or AVAX-FRAX

Boosted Farms

Boosted Farms have fixed JOE token emissions, shared between *Base Rewards* and *veJOE Rewards* pools. Boosted Farms have a Boost Factor, e.g. 1.67, which measures the total rewards available to veJOE holders vs non-holders.

- Split of veJOE vs Base Rewards are determined by a `veJoeShareBp` setting configured at a farm level and managed by protocol team.
- The *Farm Factor* measures the proportion of total rewards vs the Base rewards emitted to the farm. E.g. for a farm that rewards 60% Base + 40% veJOE pools, the farm factor = 100/60 = 1.67X.
- Base APR follows regular yield farming calculations. Users receive a share of rewards proportional to their LP token share in the yield farm.
- veJOE APR is proportional to the *User Farm Factor*, which is the square-root of their LP balance multiplied by veJOE balance.
    - *Farm Total Factor* is then the sum of all *User Farm Factor*
    - Full equation:

$$
\begin{aligned}
reward s_{per\_seconds} = & \frac{user.liquidity * joePerSec * (1 - veJoeShare)}{pool.totalLiquidity} \\
& + \frac{\sqrt{user.liquidity * user.veJoe} * joePerSec * veJoeShare}{pool.totalFactor}
\end{aligned}
$$

- Users may only receive farming boost from eligible farms. We will launch with a number of farms, but more may be added in future.
    - AVAX-USDC
    - AVAX-WETH.e
    - AVAX-WBTC.e

- AVAX-USDC.e
- AVAX-USDT.e
- AVAX-JOE
- JOE-USDC

Example 1

Alice has only 9.09% of LP tokens, but has a larger stake of veJOE and therefore receives 25.4% of total rewards.

	LP tokens	veJOE	Farm Factor	base rewards	veJOE rewards	total rewards
Alice	1	1000	31.62	0.545	2	2.545
Bob	10	100	31.62	5.454	2	7.454
Total	11	1100	63.25	6	4	10

Example 2

Both Alice and Bob have veJOE balance proportional to their LP liquidity, and therefore receive a proportional share of total rewards.

	LP tokens	veJOE	Farm Factor	base rewards	veJOE rewards	total rewards
Alice	10	1000	100	5.454	3.636	9.094
Bob	1	100	10	0.545	0.364	0.909
Total	11	1100	110	6	4	10

Example 3

Without any veJOE stake, Alice receives only 54.5% of total rewards despite providing 90.9% of LP tokens.

	LP tokens	veJOE	Farm Factor	base rewards	veJOE rewards	total rewards
Alice	10	0	0	5.454	0	5.454
Bob	1	100	10	0.545	4	4.545
Total	11	10	100	6	4	10

rJOE: Earn Rocket Joe Tokens

Rocket Joe Tokens

Rocket Joe is a new liquidity launch protocol that enables price discovery and liquidity bootstrap for new token launches. While Rocket Joe is a permission-less protocol, our platform may promote curated launch events with limited supply of issuing tokens.

We introduce an additional *rJOE* token used to determine allocation credit for participants, so that the Rocket Joe platform activity has direct benefit to *JOE* token holders.

The *rJOE* token design allows smaller participants to acquire the same allocation credit as larger participants that have staked in shorter periods of time. The introduction of a non-transferable token is also friendly to new users, which increases *JOE* token holder growth.

Design

We propose the following:

- *JOE* holders can stake *JOE* to the *rJOE* vault, and claim *rJOE* tokens in real time, similar to a yield farm.
- **rJOE is a non-traded ERC20 token with infinite supply.**
  - It is emitted by the *rJOE* vault, with emission rate controlled by the protocol.
  - *rJOE* tokens are burned by users to receive allocation credit for each launch event.
    - The price of allocation credit may be set per launch event; in Q1 2022 we will set price of 100 *rJOE* for 1 AVAX allocation credit.
- *rJOE* stakers receive *rJOE* tokens proportional to their share of the *rJOE* vault.
  - userRewardRate = userJoe / totalJoe * rJoeRewardRate.

sJOE: Earn platform revenue share

Improving U/X

We propose to pay revenue sharing in USD stablecoins, claimable in real time like a yield farm. This improves user experience in the following ways:

- Participants have more certainty as platform revenues and rewards are denoted in stable coins.
- Participants can claim rewards without needing to unstake.

Design

We propose the following:

- *JOE* holders can stake *JOE* to the *sJOE* vault, and claim *USDC (TBC)* tokens in real-time, similar to a yield farm.
- *sJOE* vault receives *USDC* from platform revenues and fees.
  - Scope includes trading fees and *sJOE* deposit fees. It may in future include platform fees e.g. other vault withdrawal fees.
  - The vault will distribute tokens daily over 24hours.
    - E.g. last day revenue is 200,000 USDC then reward rate is 200000 / 86400 = 2.3148 USDC per sec
  - The reward rate will be controlled by protocol; over time we will automate this so that revenue distribution automatically sets the reward rate.
- *sJOE* stakers receive rewards proportional to their share of the *sJOE* vault.
  - userRewardRate = userJoe / totalJoe * sJoeRewardRate.
- 0-3% Deposit fee, which increases as staked JOE increases
  - The fee is paid to the rest of sJOE participants. It is designed to reduce over-saturation of the sJOE vault.
  - For later participants that join the sJOE vault, they would need to stake in the sJOE vault to break even.

Collateralization

In Nov 2021, we introduced xJOE collateralization, where xJOE stakers can borrow against their xJOE collateral. This was a useful feature for some xJOE stakers that may wish to invest in other tokens without additional capital.

However, we observed that the adoption is relatively low:

- xJOE lending and xJOE farm maintained the same APR, indicating that the market favored yield benefits of xJOE lending over collateralization.
- As xJOE lending rewards were reduced, xJOE deposits also reduced significantly, suggesting that most lenders were not in fact borrowing against the collateral.

We propose:

- Allow JOE to be collateralizable.
- veJOE, sJOE and rJOE don't have receipt tokens and thus are not collateralizable.

Appendix

Protocol Owned Liquidity (POL)

A staple of DeFi token liquidity has been for protocols to provide incentives for market participants to provide liquidity for e.g. *JOE-AVAX*. This incentive mechanism allows for token distribution as well as a lever to manage liquidity depth, but faces sustainability issues as incentives run out. A newer mechanism, *Protocol-Owned Liquidity (POL)* popularized by *Olympus* addresses sustainability issues by allowing protocol treasuries to provide a substantial portion of liquidity depth.

ve(3,3)

A recent blogpost by Andre Cronje proposed to combine game theory elements with voting escrow token mechanism by allowing emission share to be increased as share of staked tokens increases. This additional design combines Nash equilibrium concept popularized by Olympus Dao.

xJOE revenue share staking

Users pay 0.30% fee for trading on Trader Joe, of which 0.25% is paid to liquidity providers, and 0.05% is paid to the platform. The fee is paid as LP tokens. The xJOE mechanism, which was first popularized by xSUSHI, converts the LP tokens to AVAX and then used to buy back JOE tokens from open market, and then sent to xJOE pool. This allows xJOE stakers to receive more JOE, with APR based on platform trading revenues.

This mechanism is gas-efficient for Ethereum users as they can stake once and accrue rewards. However, on Avalanche which has cheap and fast transactions, we observe that yield farms are more intuitive and allow users to claim rewards in real time. Our experiments show many users are not able to distinguish between staking and yield farms and are often confused about where to find their staking rewards.

Voting Escrow

Popularized by Curve, token holders that stake their tokens receive voting escrow tokens (e.g. veCRV). Voting escrow allows stakers to participate in protocol governance, such as the voting on adjustment of protocol incentives.

To date, Trader Joe has not yet opened governance as the voting escrow mechanism may be highly profitable for protocols to influence, resulting in uncompetitive allocation of token incentives.

Boosted Farms have fixed JOE token emissions, shared between *Base APR* and *veJOE APR* reward pools.