



MetX
Harvesting
&
Dock-Staking

26 July 2022

Harvesting and Dock-staking for MetX

MetX shall be distributed to eligible participants via harvesting and staking of XPX, currently the two different methods of minting MetX. In future, there may be more ways of obtaining MetX. For the purpose of clarity, we shall call stake, “dock-stake” so as to differentiate between the use of the word “stake” in harvesting.

Harvesting

The first MetX reward that will be rolled out shall be through harvesting, where all harvesters will automatically get a certain amount based on the number of XPX that they have pledged for harvesting. Essentially, MetX is distributed based on a pure Proof of harvest of XPX.

The distribution is based on the following formula as a reward for harvester R_i given by:

$$R_i = S_i * \frac{R}{p}$$

where,

S_i is the amount of XPX staked by the harvester expressed in Billions for the day.

R is the total amount of MetX distributed to all harvesters for the day.

p is the total amount of XPX staked by all harvesters for the day.

R is a function of the Annual Percentage Yield, $F(p)$, given by:

$$\begin{aligned} R &= p * F(p) * \text{roundup}\left(\frac{10^9}{500} * \frac{1}{365}\right) \\ &= p * F(p) * 5480 \end{aligned}$$

Currently, 1 MetX is taken as equivalent to 500 XPX. This value may change with time. Therefore, the constant, 5480, could change with time.

The annual percentage yield (APY) is given by:

$$F(p) = M * \log_{10}(LM - LF_1 * p) \text{ for } p < y$$

$$F(p) = M * (1 - \log_{10}(LF_2 * p)) \text{ for } p \geq y$$

where,

M is the multiple constant for harvesting, which is fixed at 0.13

LM is the Log multiple constant for harvesting, which is fixed at 12

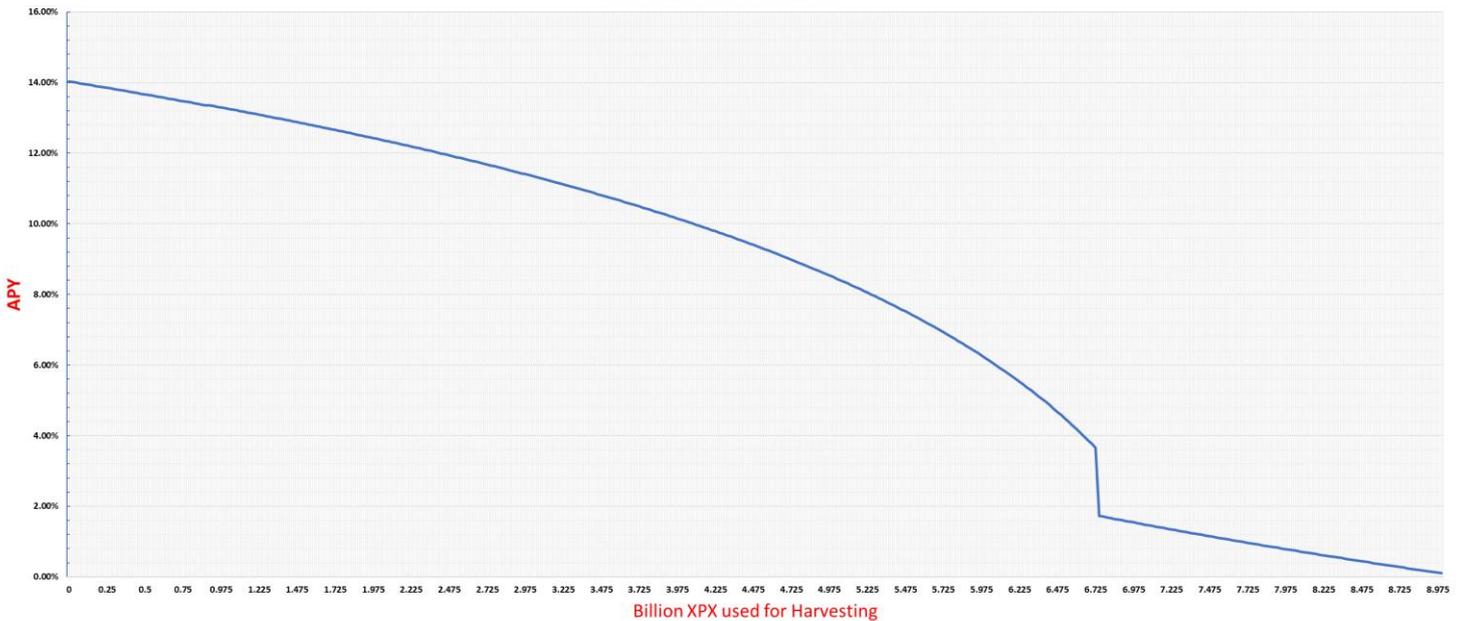
LF_1 is the Log Factor 1 constant, which is fixed at 1.5

LF_2 is the Log Factor 2 constant, which is fixed at 1.0909091

y is the cut-off where the APY will be reduced substantially. This value is currently fixed at 6.75, expressed in Billions.

Based on the above formula, the APY curve is as shown in Graph 1 below.

APY vs. Total staked



Graph 1 - Annual Percentage Yield based on total XPX harvested per day

As an example, the current total XPX vested in harvesting is about 0.9084682 Billion XPX.

Plugging this number into the formula, we get the total MetX reward for the day,

$$R = 664.557787 \text{ MetX}$$

The computed APY is,

$$F(p) = 13.348807\%$$

Harvesting – What does it mean

This harvesting scheme allows a harvester to earn MetX as an incentive on the XPX staked for harvesting. This MetX reward is over and above the fee that a harvester will get from transactions. The amount of MetX earned is calculated from the percentage of XPX staked against the total number of XPX being used for harvesting in the pool. It is to be noted that the APY is based on a benchmark 500 XPX per MetX. Should the MetX be worth more than 500 XPX, the absolute APY on XPX will be increased accordingly. Correspondingly, the absolute APU is reduced if MetX is worth less than 500 XPX.

The maximum APY is 14.0294%. However, this is not a practical number as it means nobody is harvesting. A more realistic number is about 2B XPX being pledged for harvesting. At a total of 2B XPX staked for harvesting, the APY on XPX is 12.4052%.

Rewards are calculated on a 24-hour basis, and distributed once a day. The current total vested XPX for harvesting is about 0.9084682 billion XPX. As can be seen, a typical daily payout is in the order of around 665 MetX, about 240K MetX per year. For a harvester with a stake of 9m XPX, the harvester is expected to be rewarded about 2.4K MetX a year. The inflation on MetX is therefore minimal, and shall remain scarce for a long time.

Dock-staking

Dock-staking will be rolled out after harvest staking. Dock-staking XPX is a different exercise and does not require a person to harvest in order to dock-stake. Usually, a harvester would dock-stake a certain percentage of available balance used for harvesting in order to earn a higher APY. Dock-staking for the sole purpose of earning MetX without harvesting is still possible. However, it is expected that most who dock-stake will harvest as well as in order to maximise the APY on the XPX committed.

Regardless, like fixed deposit, dock-staking is a commitment of XPX for an indefinite period of time and one can only withdraw with a minimum 30-day “notice.” In other words, one cannot withdraw immediately should one decide not to dock-stake.

The 30-day notice is counted based on the number of blocks from the current block height. Thirty days is the minimum and one can request to withdraw beyond that by increasing the number of blocks beyond the minimum blocks to withdraw.

The APY formula is similar to harvesting, which is given by:

$$F(p) = M * \log_{10}(LM - LF_1 * p) \text{ for } p < y$$

$$F(p) = M * (1 - \log_{10}(LF_2 * p)) \text{ for } p \geq y$$

where,

M is the multiple constant for harvesting, which is fixed at 0.08

LM is the Log multiple constant for harvesting, which is fixed at 12

LF_1 is the Log Factor 1 constant, which is fixed at 1.5

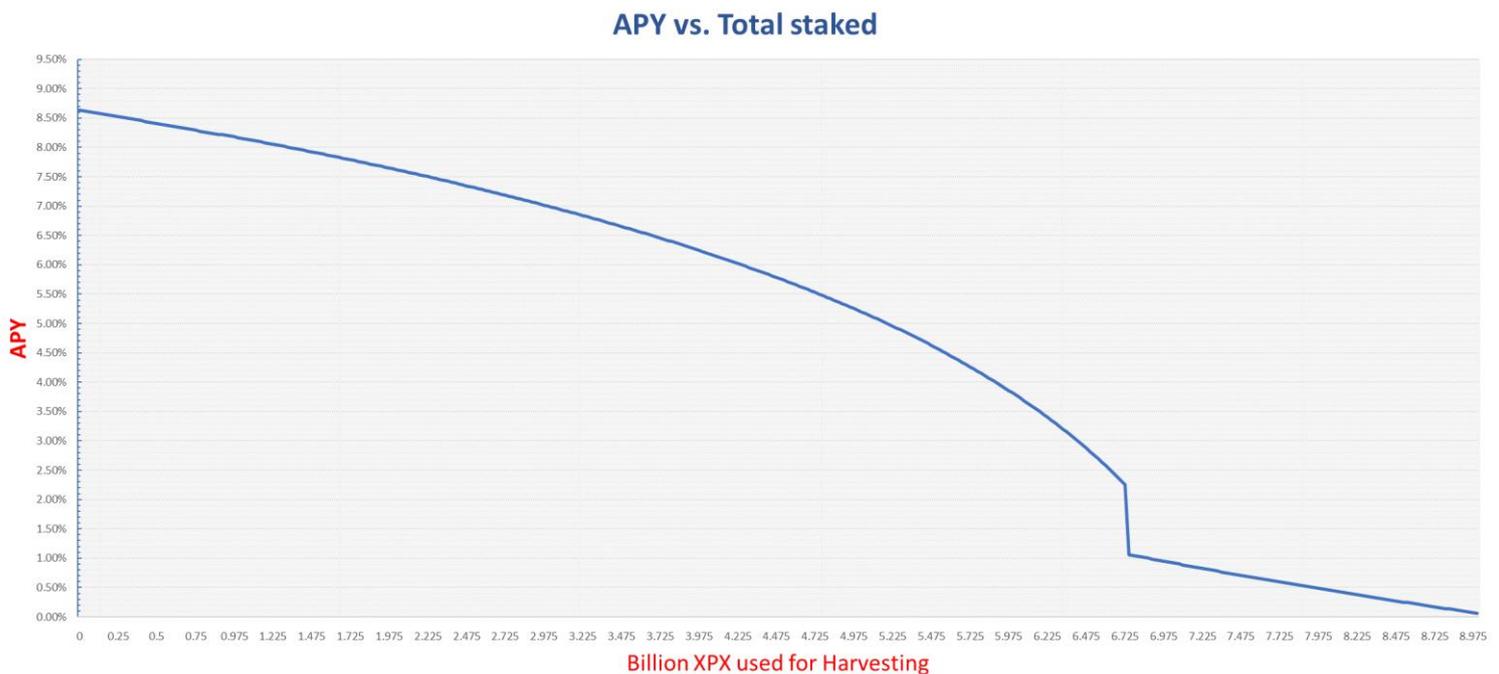
LF_2 is the Log Factor 2 constant, which is fixed at 1.0909091

y is the cut-off where the APY will be reduced substantially. This value is currently fixed at 6.75, expressed in Billions.

From the above equation, it can be seen that only the multiple constant has changed from 0.13 to 0.08, i.e., reduced by 38.46%.

Hence, for the same 0.9084682 billion XPX consumed for dock-stake, the total daily payout shall be about 409 MetX. If all harvesters dock-stake their XPX, then the total APY for 0.9084682 billion XPX harvested and dock-staked is about 21.56%.

Graph 2 below shows the APY yield curve based on the number of XPX dock-staked.



Graph 2- Annual Percentage Yield based on total XPX staked per day

Dock-staking – what does it mean

It should be noted for the same XPX that is used to harvest, one can opt to further dock-stake so that one can get a higher aggregate APY. Further, because dock-staking requires that the XPX can only be withdrawn after a minimum period of thirty days, one should consider the cashflow required. The entire sum or a fraction of the amount of XPX pledged for harvesting can be used to dock-stake. In other words, one does not necessarily need to commit all harvested XPX for dock-staking, giving the person the option of planning the cashflow.

Dock-staking is not available yet but will be implemented by the 4th. Quarter of 2022. We will introduce a plugin in the chain and allow a person to dock-stake from the wallet.