

YAM Token Distribution Formula for Breathe-To-Earn Sessions

Overview

The YAM token distribution formula is designed to allocate a fixed amount of YAM tokens among participants in a Breathe-To-Earn session based on their respective tiers. Each tier represents a different percentage of the maximum power that a participant can achieve. This formula can be applied to any mixture of tiers and any number of participants, ensuring a fair and proportional distribution of YAM tokens.

Steps to Compute YAM Distribution

1. Determine Total Effective Power:

The total effective power is the sum of the products of the number of participants in each tier and the percentage of max power for that tier.

$$\text{Total Effective Power} = \sum_{i=1}^n (N_i \times P_i)$$

Where:

- N_i is the number of participants in tier i
- P_i is the percentage of max power for tier i

2. Calculate YAM Tokens per Effective Percentage Point:

This step determines how many YAM tokens correspond to one percentage point of effective power.

$$\text{YAM per Percentage} = \frac{T}{\text{Total Effective Power}}$$

Where:

- T is the total YAM tokens available in the session

3. Allocate YAM Tokens to Each Participant:

For each tier, compute the YAM tokens allocated to each participant by multiplying the tier's percentage of max power by the YAM tokens per effective percentage point.

$$\text{YAM}_i = P_i \times \text{YAM per Percentage}$$

Each participant in tier i receives YAM_i tokens.

Example Calculation

Suppose we have 24 participants, with 12 in Tier 3 and 12 in Tier 2. The total YAM tokens available in the session are 3.6 million.

1. **Total Effective Power:**

- Tier 3 (12 participants at 100% max power each): $12 \times 100 = 1200\%$
- Tier 2 (12 participants at 75% max power each): $12 \times 75 = 900\%$
- Total Effective Power: $1200\% + 900\% = 2100\%$

2. **YAM per Percentage:**

$$\text{YAM per Percentage} = \frac{3,600,000}{2100} = 1714.29 \text{ YAM per percentage point}$$

3. **YAM Tokens per Participant:**

- Tier 3: $100 \times 1714.29 = 171,429 \text{ YAM}$
- Tier 2: $75 \times 1714.29 = 128,571.75 \text{ YAM}$

Thus, each Tier 3 participant receives 171,429 YAM tokens, and each Tier 2 participant receives 128,571.75 YAM tokens.

This formula and function can be adapted for any combination of tiers and participant numbers, ensuring a fair and proportional distribution of YAM tokens based on tier levels.

Step-by-Step Solution

1. **Determine Total Effective Power:** Calculate the sum of the products of the number of participants in each tier and the percentage of max power for that tier.
2. **Calculate YAM Tokens per Effective Percentage Point:** Divide the total YAM tokens by the total effective power to get the YAM tokens per percentage point.
3. **Allocate YAM Tokens to Each Participant:** For each tier, multiply the tier's percentage of max power by the YAM tokens per effective percentage point to determine the YAM tokens each participant in that tier will receive.

Example Calculation

Given:

- Total YAM tokens available in a session: 3,600,000
- Tiers: [25, 50, 75, 100] (Percentages of max power for Tier 0, Tier 1, Tier 2, Tier 3)
- Participants: [15, 8, 5, 5] (Number of participants in Tier 0, Tier 1, Tier 2, Tier 3)

Example Calculation

Given:

- Total YAM tokens available in a session: 3,600,000
- Tiers: [25, 50, 75, 100] (Percentages of max power for Tier 0, Tier 1, Tier 2, Tier 3)
- Participants: [15, 8, 5, 5] (Number of participants in Tier 0, Tier 1, Tier 2, Tier 3)

Step 1: Total Effective Power

$$\text{Total Effective Power} = (15 \times 25) + (8 \times 50) + (5 \times 75) + (5 \times 100) = 375 + 400 + 375 + 500 = 1650$$

Step 2: YAM per Percentage

$$\text{YAM per Percentage} = \frac{3,600,000}{1650} \approx 2181.82$$

Step 3: YAM Tokens per Participant

- Tier 0 (Free, 25% max power):

$$25 \times 2181.82 = 54,545.45 \text{ YAM}$$

- Tier 1 (50% max power):

$$50 \times 2181.82 = 109,090.91 \text{ YAM}$$

- Tier 2 (75% max power):

$$75 \times 2181.82 = 163,636.36 \text{ YAM}$$

- Tier 3 (100% max power):

$$100 \times 2181.82 = 218,181.82 \text{ YAM}$$