

Eco Bitcoin: A Virtually Mined, Faster, Low-cost, Greener, Peer-to-Peer E-Cash System Idea

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Abstract. Bitcoin is the standard by which all other cryptocurrencies are measured and remains the de-facto gold standard of crypto. Unfortunately, I believe it is no longer what its creator intended it to be. Now largely mined, owned, controlled and manipulated by large corporations, it is out of reach and not fit for purpose of the average retail crypto user. Eco Bitcoin is an idea, an experiment, something different and novel. It's not implied that it will replace or compete with the real thing.

1. Introduction

As stated in Satoshi's original whitepaper "The steady addition of a constant of amount of new coins is analogous to gold miners expending resources to add gold to circulation. In our case, it is CPU time and electricity that is expended.". The Bitcoin network's annual electricity consumption is currently estimated to be in the range of 100-200 TWh (terawatt-hours), with significant fluctuations depending on Bitcoin's price and mining profitability. This range places Bitcoin's energy consumption on par with the annual energy usage of medium-sized countries. [01]

FRED Energy projects are aimed at exploring innovative ideas within blockchain, crypto and energy. Whilst the Bitcoin network continues to expend ludicrous amounts of energy, our project Sol-bank provides low-cost small home solar (SHS) to underserved communities. We developed a world first USDC to Pay as You Go device token generator, now being used in Uganda and Nigeria and have accepted crypto payments for real green energy-based products since 2019.

This project, Eco Bitcoin is an exploration into algorithmic virtual mining using NFTs as Proof Of Participation (POP).

2. Proof Of Participation (POP)

Ownership of a Virtual Miner NFT is the owners POP, with eBTC rewards based on the Virtual Miner Type, Speed and Total Daily Emissions.

$$\text{RewardsPerDay}_{\text{type}} = \left(\frac{\text{VMSpeed}_{\text{type}} \times \text{VMNumberOf}_{\text{type}}}{\sum (\text{VMSpeed} \times \text{VMNumberOf})} \right) \times \text{TotalDailyEmission}$$

Where;

- $\text{RewardsPerDay}_{\text{type}}$ is the number of rewards generated per day for a VirtualMinerType

- VMSpeedtype and VMNumberOfType are the speed and number of miners of a specific VirtualMinerType
- The denominator is the sum of the products of the speed and number of all miners, representing total mining power
- TotalDailyEmission is the total number of rewards available for mining each day

3. eBTC Emissions

There is a maximum supply of 21,000,000 eBTC with an annual quartering of eBTC available for the subsequent years. eBTC not virtually mined for the preceding year will be added to the calculations and a new 10-year emission schedule created.

Year	eBTC
1	5,563,288
2	4,172,466
3	3,129,350
4	2,347,012
5	1,760,259
6	1,320,194
7	990,146
8	742,609
9	556,957
10	417,718

Note: Only virtually mined, and eBTC added to liquidity pools from Virtual Miner sales will be available on the markets (SDEX). This provides the scarcity factor inherent in Bitcoin.

4. Virtual Miners

Virtual Miners are functional NTFs issued on the Stellar network and available on the Litemint marketplace. A higher speed (power) Virtual Miner has a greater block reward of eBTC per hour. A Virtual Miner NFT has the potential to increase its resale value based on eBTC value. Virtual Miners will be released in batches, R1,R2,R3 etc.

VirtualMinerType	VMNumberOf	VMSpeed
FX100	300	1
FX250	200	2.5
GFX500	150	3.6
GFX750	100	6
GFX808	100	7.8

5. eBTC Block Reward Payments

Rewards are sent hourly and weekly. Hourly payments are 50% of Virtually Mined eBTC. The remaining 50% are accumulated and sent weekly as a claimable balance with a randomly generated not claim before date of between 9-12 months. Below is the current schedule based on emissions, POP, VMNumberOf (Number of VMiners) and will change once the project moves into actual Number of VMiners /Emissions after the first year.

VirtualMinerType	eBTC per MinerTypePerDay	PerWeek	PerHour	HourlyPayout	WeeklyPayout
FX100	5.6037	39.2257	0.2335	0.1167	19.6128
FX250	14.0090	98.0630	0.5837	0.2919	49.0315
GFX500	20.1733	141.2133	0.8406	0.4203	70.6067
GFX750	33.6200	235.3400	1.4008	0.7004	117.6700
GFX808	43.7000	305.9000	1.8208	0.9104	152.9500

6. Liquidity

Liquidity for eBTC is added each time a Virtual Miner is sold, with 95% of the sale price being used to add liquidity, the remaining 5% to cover fees associated with claimable balances. The asset pairs have been chosen to provide a mix of stable and high risk. Liquidity will not be removed by the project and will remain as is for the lifetime of the project. This is unless corrective action is required due to issues with one of the asset pairs. Should this occur, a community vote will be required to select the replacement asset.

Liquidity Pool	Percentage
USDC/eBTC	35%
yBTC/eBTC	15%
XLM/eBTC	15%
Gold (mintx)/eBTC	15%
Silver (mintx)/eBTC	15%
Reserved XLM CB	5%
Total	100%

7. Future Work – Soroban (contracts)

The project will aim to move the Virtual Mining logic, emissions and payments into smart contracts.

8. Conclusion

The shift towards more energy-efficient blockchain technologies is an ongoing process, and continued innovation in this space could bring us closer to realising the idea of virtual mining algorithms that do not require substantial real-world energy consumption. It could also be a possibility that somewhere in the future, quantum resistant blockchains and their consensus mechanisms shift to a virtual AI driven state.

References

01-Cambridge Bitcoin Electricity Consumption Index (CBECI) - <https://ccaf.io/cbnsi/cbeci>