Cornell Bitcoin Club
Proof of Work Clusters | Fall '24

Bitcoin's values:

- **Decentralized:** Regardless of if you are a developer, miner, node operator, or individual of any standing, there must be community consensus for any change.
- **Borderless:** Bitcoin exists everywhere and anywhere, outside the borders of nation states.
- **Open-Source:** Bitcoin is an inclusive, open-source project that is strengthened by the addition of community members, contributing their efforts for the benefit of all network participants. Anyone, of any background or standing, can contribute in any way they see fit.
- **Peer-to-peer:** As mentioned, bitcoin was created as "a purely peer-to-peer version of electronic cash [that] would allow online payments to be sent directly from one party to another without going through a financial institution." Notably, "peer-to-peer" could mean everything from you and your friend to Cornell and Ithaca College to the US and Brazil.
- **Transparent:** Not only is bitcoin's monetary policy transparent, but so are the on-chain transactions and holdings.
- **Auditable:** Given the transparency, bitcoin is an investment that can be uniquely audited, reducing the need for trust.
- **Immutable & Incorruptible:** Critically, bitcoin is immutable, meaning the transparency and auditability cannot be compromised, preventing corruption.
- **Trustless:** In combination, bitcoin's features allow network participants to participate without needing to trust and the ability to easily verify.
- **Censorship-resistant:** Your (economic and literal) voice and your actions cannot be silenced.
- **Permissionless:** Participating in the network requires no approval.

Stakeholders in Bitcoin:

**Not necessarily exhaustive*

- Speculators
- HODLer
- Node
- Miner
- Mining Pool
- Exchanges
- Wallet Providers
- Builder (dev, community, company (service providers))

- Regulators
- Institutional Investors
- Media
- Academic / Researchers

Why do we have these clusters?

For transparency, censorship-resistance, permissionless-ness.

Transparent Effort: Bitcoin is tied to energy, which is scarce. But even more impactful, it is tied to the scarcest resource, time. In each cluster, everyone is putting in the same amount of their scarcest resources: time and energy in a transparent way.

Censorship-resistant Recognition: While in bitcoin mining, not every miner's exertion of effort results in a reward, in CBTC, if you share your time and energy then you can “achieve the reward” of moving up a cluster, if you’d like.

Permissionless Participation: The opportunities are yours to work for. No one will create a barrier to knowledge or participation. Just as in Bitcoin there is no “application” to join the network, this club has no application. Embodying its permissionless nature, you can freely enter and exit. However, different rewards come with different tiers.

How does this work?

The 21,000,000 bitcoin will be mined over a span of 131 years. To keep this time schedule, on average, a new block is mined every 10 minutes and this average is maintained through a “difficulty adjustment” every 2,016 blocks (or about every 2 weeks). If the blocks are coming in > every 10 minutes on average, the difficulty level is reduced and vice versa.

For CBTC, our “difficulty adjustment” between clusters will occur at the end of every semester. Note, you do not have to go from HODLer → Node → Miner. If the PoW is completed, you can go from HODLer → Miner, for instance.

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Clusters

HODLer

HODLers play a critical role in the Bitcoin network. For instance, 45% of the available bitcoin has not moved in the past 6 months (source). Just by joining the Club, you are a Hodler. However, you must complete certain PoW to be eligible to adjust up to a “Node.”

PoW Required

a. Attend 6 meetings

Node

Bitcoin can operate in a trustless manner because of nodes. “Bitcoin nodes cooperate with Bitcoin miners to maintain the integrity of the system” and “are the central nervous system of the Bitcoin network. They broadcast, verify, and store transactions. Distributed, fully-functioning nodes are central to Bitcoin’s decentralized, peer-to-peer architecture and help keep the network secure” (source).

PoW Required

a. Hodler +
b. You participate in a project(s) for 3 hours per week
    i. Ex: Financial freedom study
    ii. Social media posts + update resource guide
    iii. You build community around campus
    iv. Write Club’s weekly and semesterly reports
    v. Maintain Club’s website
    vi. Other (Different projects of that semester)

Miner

Lowercase “b” bitcoin would not exist without Miners. Bitcoin mining is the only physical part of bitcoin (aside from the physical network participants). “Bitcoin miners confirm bitcoin transactions, secure the Bitcoin Network, and release new bitcoin at a consistent rate” (source). And, abstracting, they coordinate the efficient use of energy.

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PoW Required:

a. Hodler + Node +
b. Lead a meeting
c. You attend every meeting (1 excused)
d. You have to be a HODLer for at least 1 semester to be a Miner
e. You have to be a Miner to be President, Vice President, etc…
f. You attend every "Miner Meeting"
    i. You get 1 unexcused absence. Then, if you go "offline," you have to email all Miners as to why you didn't show up to a miner meeting. Then, we can support you as a community.
    ii. Excused absences:
        1. Athletic commitment
        2. Exam is excused
        3. Office Hours (only if it is the only time offered for the entire week)

Incentives

What is your reward for the time and energy you have exerted? Achieving digital scarcity and upholding its core values, bitcoin allows you to store your energy into the future in a way that cannot be debased. As a result, your reward for PoW in the club should be stored in something that grows, not debases, overtime.

- The Bitcoin Network/ Community
- Alumni Network
- Jobs
- Professional development support
    - Conference
    - Office visit
- Prestige
    - LI badges
    - Certificate?
    - If you're a miner, you're eligible to be a BSN representative
- Your Ideas?