Bitcoin's Energy Frontier:

Reshaping Markets and Legal Landscapes

STEPTOE & JOHNSON PLLC

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Presenters

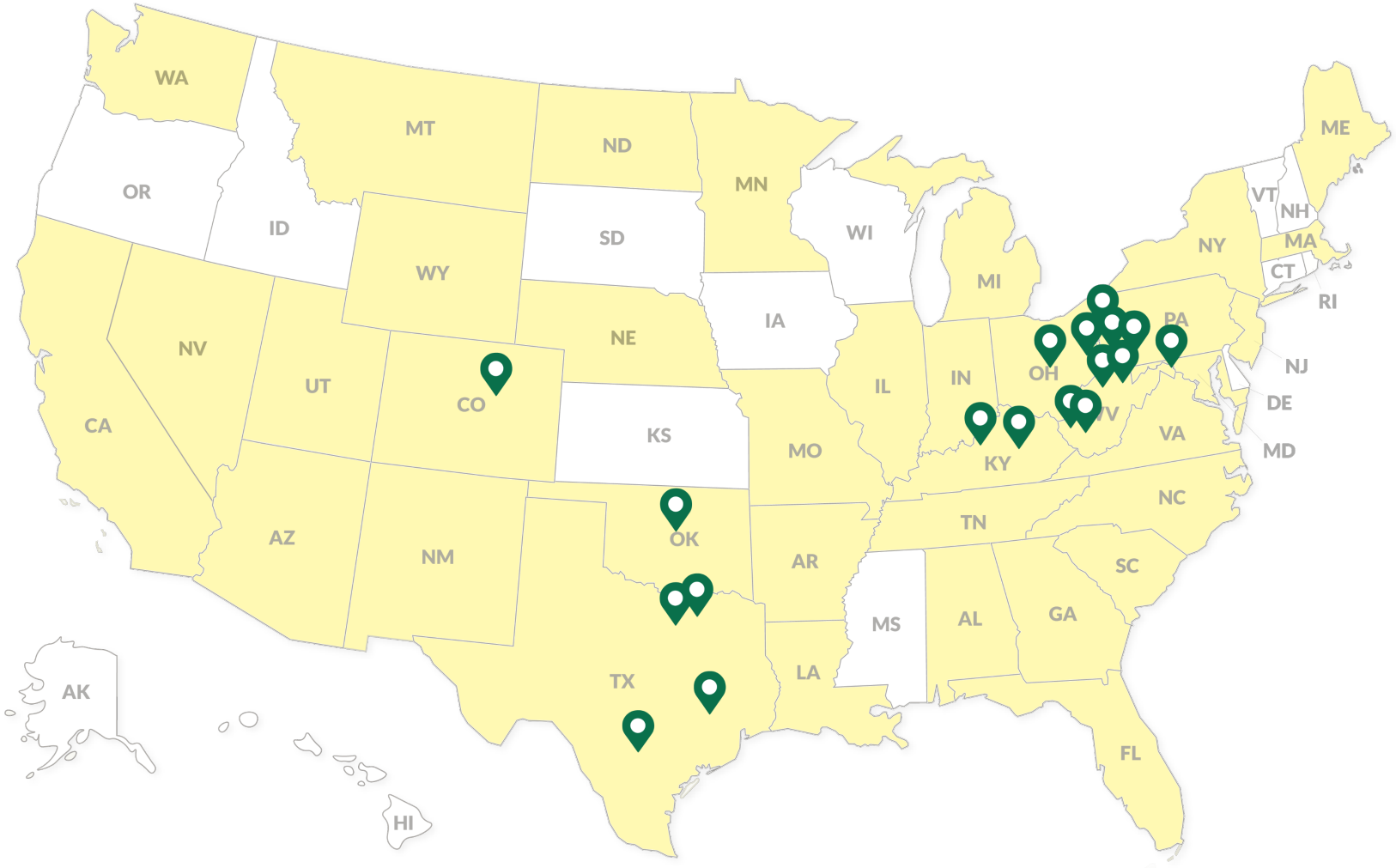
Braden L. Christopher

724-749-3181
braden.christopher@steptoe-johnson.com

Melissa A. Munson

281-203-5765
melissa.munson@steptoe-johnson.com

Office Locations & Attorney Licensure



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Agenda

- Questions for the Audience
- Energy Consumption
- What is Bitcoin/Proof of Work (PoW)
- Industry Applications
- Policy and Financial Developments
- Legal Roles and Opportunities
- Potential and Wrap-up
- Q&A

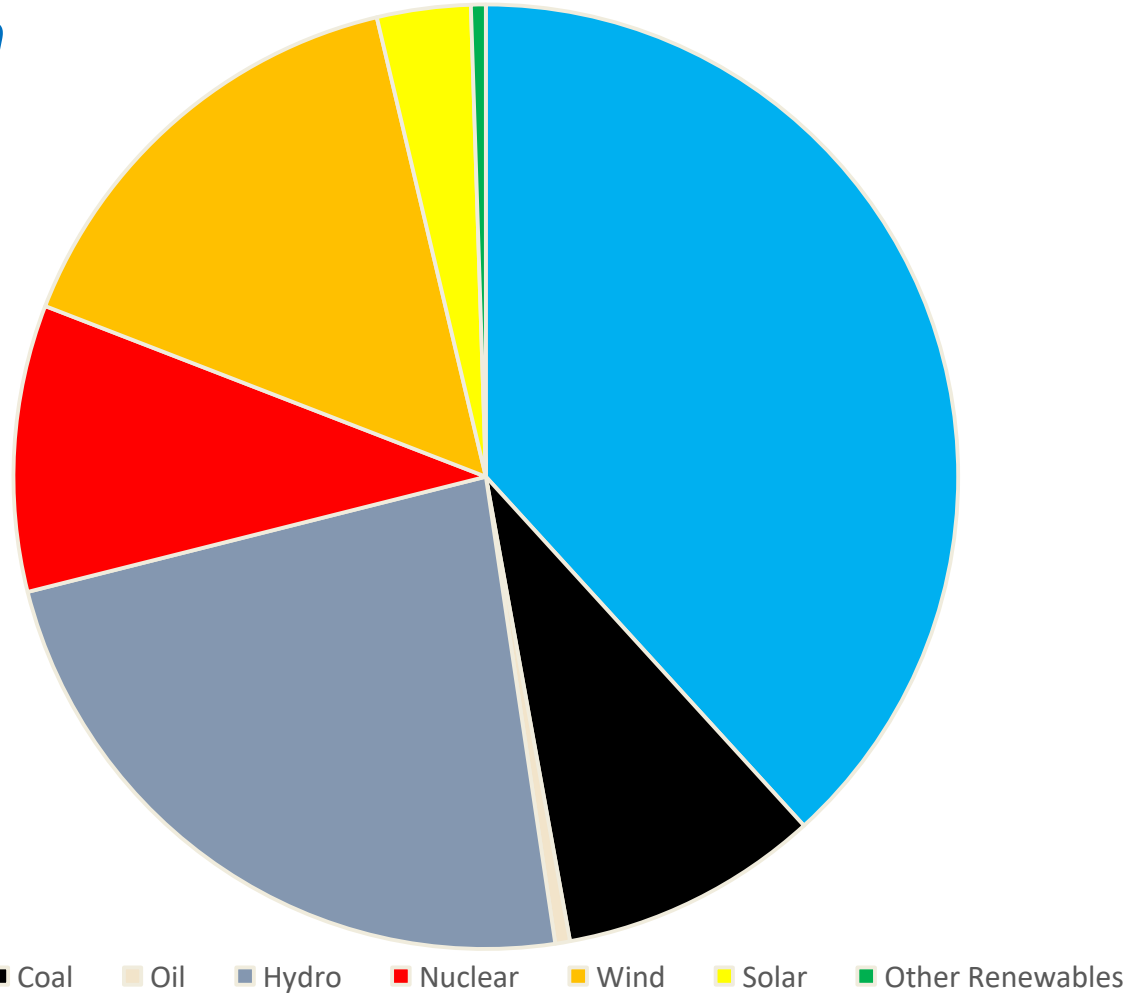
Audience Question 1

Audience Question 2

Audience Question 3

Bitcoin's Energy Mix Breakdown

- Fossil Fuels (47.6%): Natural gas (38.2%), Coal (8.9%), Oil (0.5%)
- Non-Fossil (52.4%): Renewables (42.6%), Nuclear (9.8%)
- Renewables Breakdown: Hydro (23.4%), Wind (15.4%), Solar (3.2%), Other (0.5%)
- 0.83% Global Electricity Consumption (211.58 TWh)

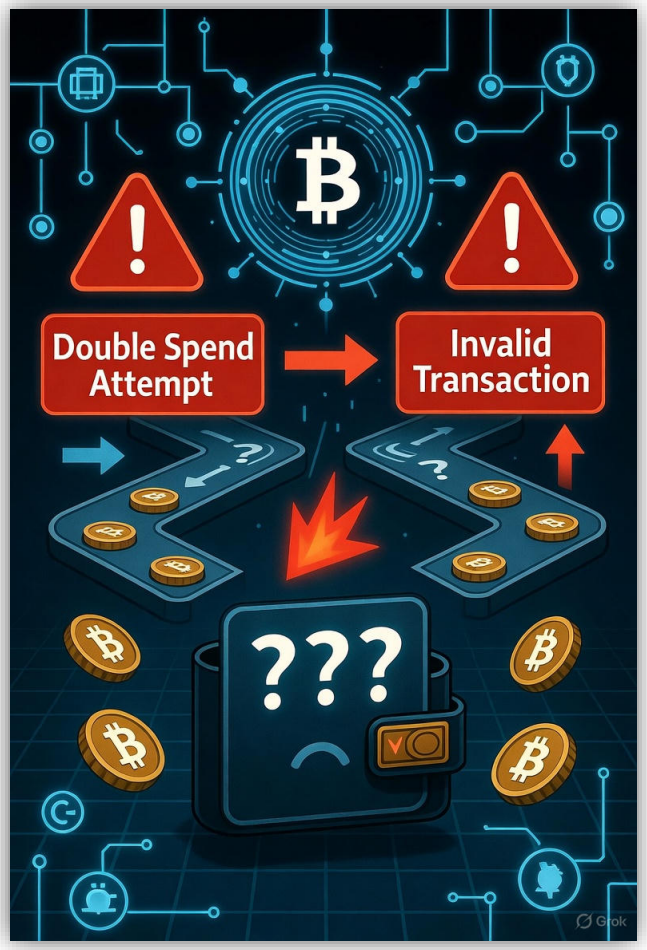


Bitcoin's Intellectual Foundations

- DigiCash (1989, David Chaum): Pioneered anonymous e-cash with blind signatures; first commercial attempt but centralized
- Hashcash (1997, Adam Back): PoW to deter spam; Bitcoin adapted it for mining and block creation
- b-money (1998, Wei Dai): Decentralized anonymous cash with PoW money creation and distributed ledgers
- Bit Gold (1998, Nick Szabo): Unforgeable digital property via PoW chains and timestamped registries
- Reusable Proof of Work (2004, Hal Finney): Transferable PoW tokens on tamper-resistant servers
- Cypherpunk Movement: Privacy-focused cryptography and anonymous systems (e.g., Eric Hughes' Manifesto)

Bitcoin's Origins

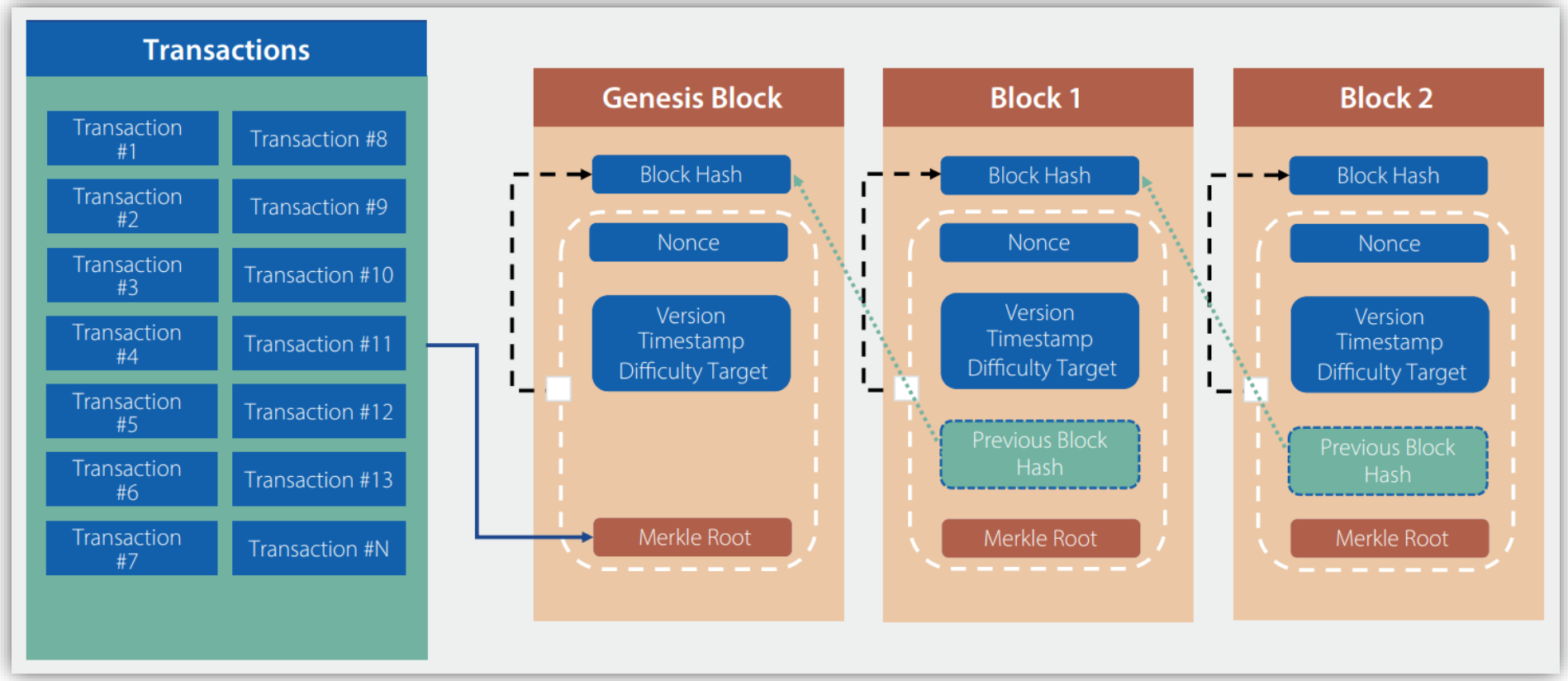
- Conceived by pseudonymous Satoshi Nakamoto in 2008 amid financial crisis and launched January 3, 2009
- Whitepaper: "Bitcoin: A Peer-to-Peer Electronic Cash System"
- Solved double-spend problem: A trustless, peer-to-peer system enabling direct online payments without intermediaries, reducing reliance on centralized trust
- Emphasized censorship resistance, privacy, and financial sovereignty to empower users against institutional control



How Proof of Work (PoW) Secures Bitcoin

- PoW: Miners solve computational puzzles to validate transactions
- Energy-intensive: Deters attacks (e.g., 51% attack costs billions)
- Gold analogy: Scarcity through mining difficulty
- Fixed supply: 3.125 BTC/block reward (halving every 4 years), 21M cap by 2140
- “The system is secure as long as honest nodes collectively control more CPU power than any cooperating group of attacker nodes.” Bitcoin whitepaper

Block Example



SHA-256 Hash: 000000000000000000001d33c72f10f89c62c662dd6053f8a400e05c1f97c5af7

Block Example

SHA-256 Cryptographic Hash Algorithm

A **cryptographic hash** (sometimes called 'digest') is a kind of 'signature' for a text or a data file. SHA-256 generates an almost-unique 256-bit (32-byte) signature for a text. See below for the source code.

Enter any message to check its SHA-256 hash

Message "Eventually at most only 21 million coins for 6.8 billion people in the world if it really gets huge". - Satoshi Nakamoto

Hash 5d8f928762109990434cdf063286ef167b08740afd0f622af4fefe0e5cde27eb 0.100ms

Note SHA-256 hash of 'abc' should be: ba7816bf8f01cfea414140de5dae2223b00361a396177a9cb410ff61f20015ad

Enter any message to check its SHA-256 hash

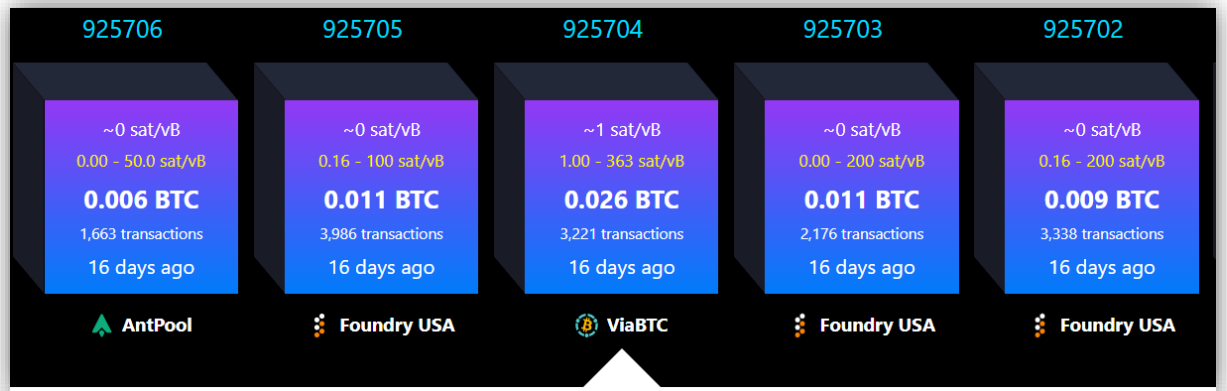
Message "Eventually at most only 21 million coins for 6.8 billion people in the world if it really gets huge." - Satoshi Nakamoto

Hash b7b19a00cfd4b80367a293a30c4126144eab51baf49c80ea91790f9d8c55ff74 0.100ms

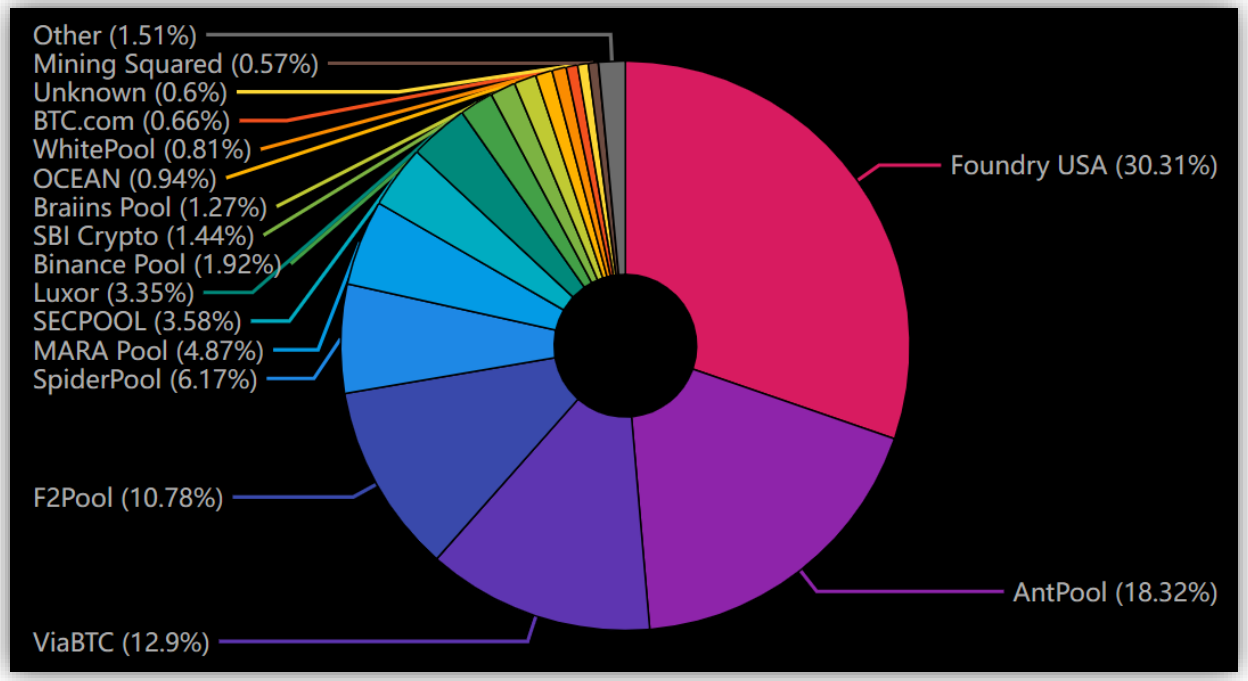
Note SHA-256 hash of 'abc' should be: ba7816bf8f01cfea414140de5dae2223b00361a396177a9cb410ff61f20015ad

Note location of period inside quotation in first example and outside quotation in second example.

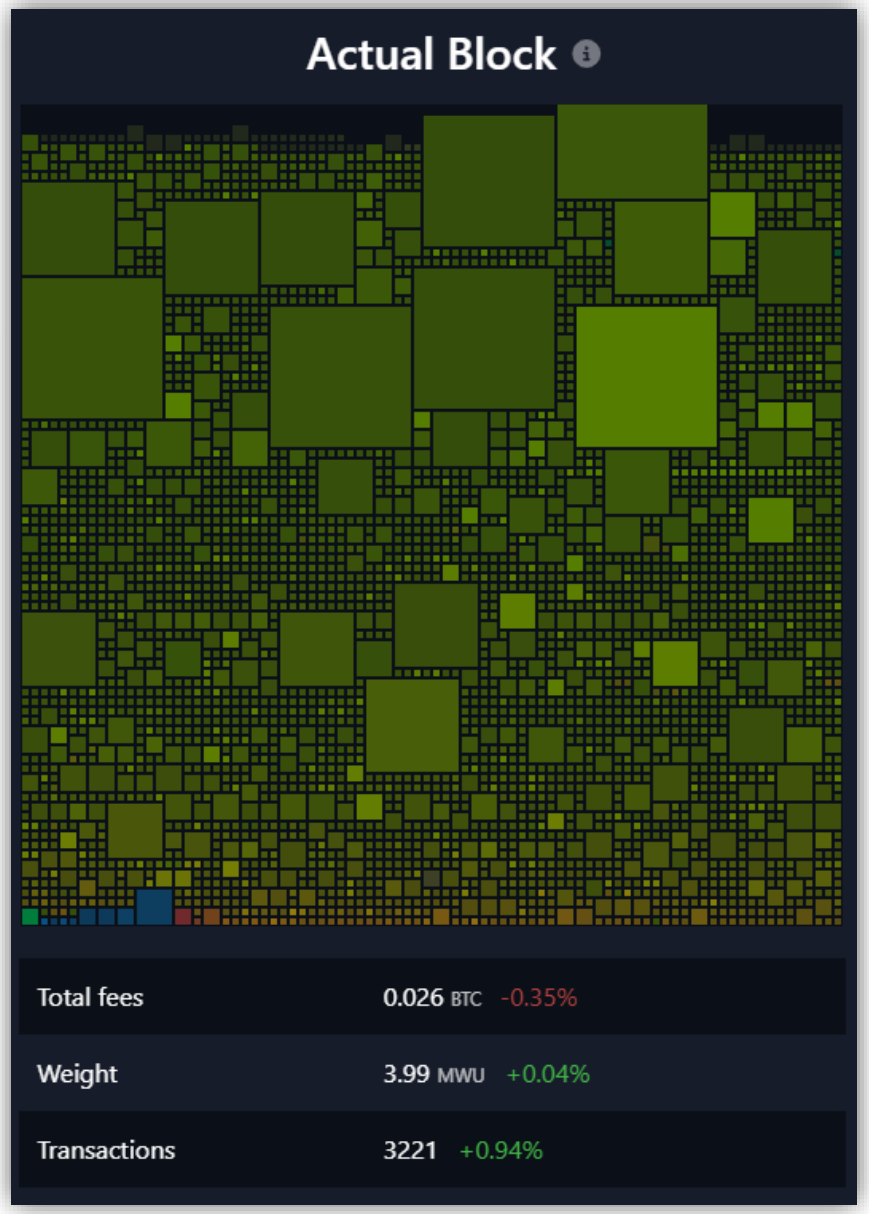
Block Example



Block Example



Pool Ranking



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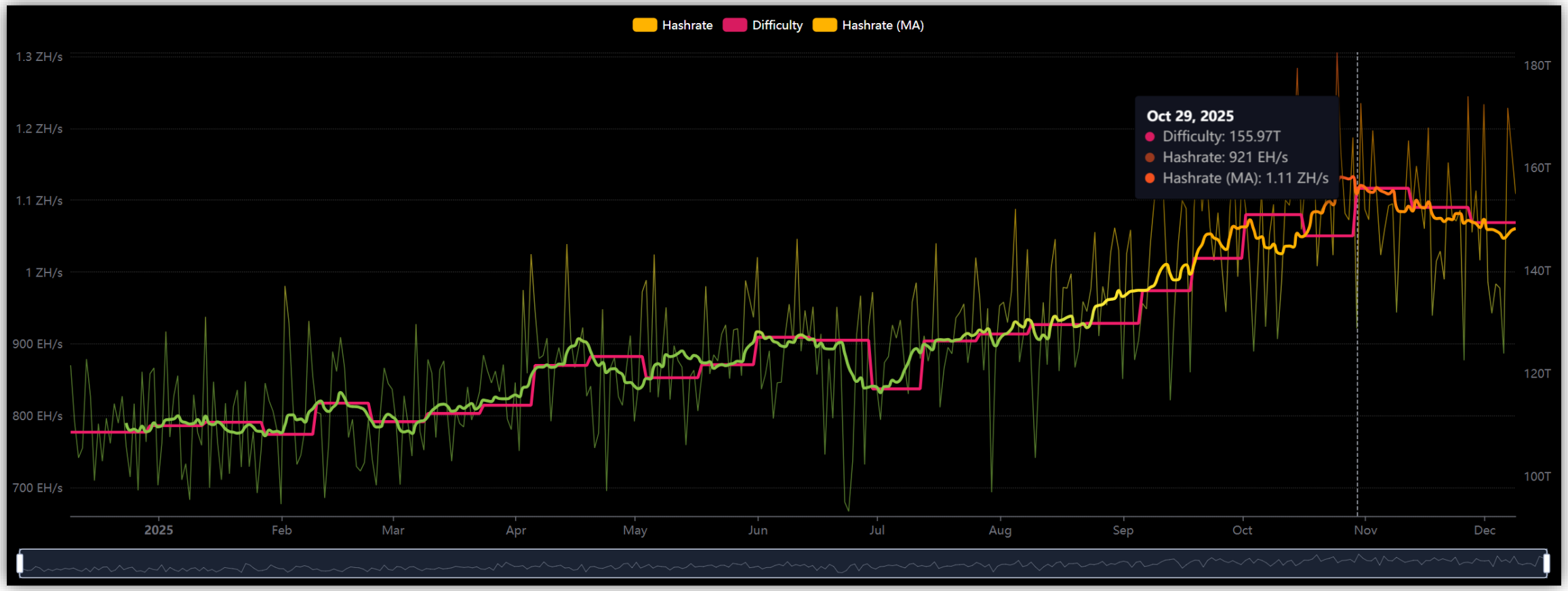
Hashrate & Difficulty 2025



Mining Operations Over Time

Early Years

Today

Energy Industry Applications

- Convert flared or vested gas into power
- Monetize stranded energy
- Promote grid stability
- Recover waste heat
- Other methane mitigation
- Integration with other energy technologies (e.g., nuclear, ocean thermal energy conversion)

Bitcoin Mining and the AI Data Center Boom (Texas)

- Texas large-load requests surged to 226 GW in 2025 (up 4X from 63 GW end-2024), with AI data centers accounting for ~73% of new applications
- AI projects often request >1 GW each, offering ~$25/kWh revenue vs. Bitcoin mining's ~$1/kWh, driving energy prices up 15-20% in key regions
- Miners adapting: Galaxy Digital ($460M conversion), IREN ($9.7B Microsoft deal), CleanSpark (285 MW AI site) repurposing facilities for higher-revenue AI/HPC operations
- Grid implications: AI's constant demand vs. mining's flexibility strains reliability; ERCOT projects data centers at 78 GW by 2030 (2X 2024 forecast)
- Opportunities: Miners' flexible load can stabilize grid, but competition intensifies for reliable power sources

Policy Developments

- Federal Strategic Bitcoin Reserve (3/5/2025): 200,000 BTC from Treasury forfeitures as national asset
- BITCOIN Act (S.954, introduced 3/11/2025): Proposes 1M BTC purchase over 5 years, 20-year hold
- Guiding and Establishing National Innovation for U.S. Stablecoins Act (GENIUS Act) (S.1582, effective 7/18/2025): Regulatory framework for payment stablecoins
- Digital Asset Market Clarity Act of 2025 (H.R.3633, introduced 5/29/2025): Regulatory framework for secondary trading, asset classification, and intermediary registration
- State Reserves: Texas, Arizona, New Hampshire establish their own in 2025

Financial Developments

- Spot Bitcoin ETFs Explosion: Launched in 2024, 2025 saw record inflows ($113 billion now invested), making BTC accessible via traditional brokers
- Institutional Surge: Firms like BlackRock and Fidelity drove adoption, with ETFs outperforming markets and breaking TradFi barriers
- Market Transformation: ETFs democratized access, reduced volatility, and elevated Bitcoin's asset class valued at $2T
- Energy Tie-In: Rising demand from ETFs increases hash rate, creating opportunities for reliable power sources in mining

Various Mining Deal Structures

- Operator as seller of natural gas
- Operator as provider of electricity
- Operator as JV partner or project co-owner
- Operator as owner of venture

Legal Issues to Consider

- Lease obligations
- Surface rights
- Third-party contractual obligations
- Regulatory oversight
- NGOs and third-party challenges

Legal Issues to Consider

- Deal terms
  - Term
  - Contributed assets
  - Funding
  - Timing
  - Budgeting and obligation to participate
  - Future development or expansion
  - Costs of treatment
  - Management
  - Expenses
  - Compensation
  - Exit

Legal Roles

- Drafting offtake agreements for flared / stranded associated gas
- Navigating methane-emission compliance (Texas RRC, EPA, state air permits)
- Volume-share structures
- Force majeure & curtailment clauses tied to production
- Tax treatment
- Water use & cooling permits
- Ordinances & local zoning

Transformative Potential

- Bitcoin's PoW transforms energy into a decentralized, global, permissionless financial network valued at $2 trillion
- Energy-intensive mining ensures scarcity and value — like gold, but with a hard-coded 21 million cap
- Digital nature enables instant, borderless transactions — surpassing gold's physical constraints
- These characteristics, rooted in PoW's reliance on energy, reshape energy and financial systems
- Energy producers and attorneys are at the center of this integration

Questions?

Braden L. Christopher

724-749-3181
braden.christopher@steptoe-johnson.com

Melissa A. Munson

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melissa.munson@steptoe-johnson.com

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