Prepared exclusively for

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Prioritizing investment in residential energy efficiency and renewable energy—A case study for the US Midwest
RJ Brecha, A Mitchell, K Hallinan, K Kissock
Energy Policy 39 (5), 2982-2992

Economic incentives and regulatory framework for shale gas well site reclamation in Pennsylvania
AL Mitchell, EA Casman
Environmental science & technology 45 (22), 9506-9514

Surface water withdrawals for Marcellus Shale gas development
AL Mitchell, M Small, EA Casman
Environmental science & technology 47 (22), 12669-12678

Lung cancer risk from radon in Marcellus shale gas in northeast US homes
AL Mitchell, WM Griffin, EA Casman
Risk Analysis 36 (11), 2105-2119

Measurements of methane emissions from natural gas gathering facilities and processing plants: Measurement results
AL Mitchell, DS Tkacik, JR Roscioli, SC Herndon, TI Yacovitch, ...
Environmental science & technology 49 (5), 3219-3227
Upstream and midstream oil & gas
Pipeline engineering, project management
Business development

One of the largest private retail energy suppliers
Commercial and residential solar developer/investor
Quantitative risk (finance), weather risk
Supply analytics and forecasting

One of the largest regulated public utilities
3.5M gas customers / 500k electric customers
Enterprise strategy and risk
Business transformation

Bitcoin technology startup
Co-founder and CEO

MicroStrategy World 2023
A Disconnected Industry
Cost, price and economic value are grossly misaligned

Non-energy costs:
Transactional and capital inefficiency adds 10-20% to the total energy bill

No price signal:
97% of smart meters in the US are dumb

Unrealized economic value:
~3.5 billion people lack access to *reliable* electricity
The diagram illustrates the market equilibrium where the price and quantity are determined by the intersection of the demand and supply curves. The equilibrium price is denoted as $P^*$ and the equilibrium quantity as $Q^*$. The point where the two curves intersect is the market clearing point, indicating the price at which the quantity demanded equals the quantity supplied.
The Transactive Energy System

Synchronizing data and payments with the flow of energy

- Real-time price signal
- Real-time, two-way communication
- Buying and selling without intermediaries and without borders
Decentralized Settlement Platform
Trustless, instant contract settlement unconstrained by the protocol

Party 1
Option A: Managed, non-custodial node

Option B: Bring-your-own-node

Oracle(s)
IoT data, web APIs, market data, AI analytics, etc.

Programmatically enforce complex and multi-party contracts
Implement dynamic control structures to manage credit and collateral
Store contracts and transaction data on a fully segmented server
Access verifiable and auditable financial and operational records
Configure partner/investor distributions, revenue and profit shares
Automate on/off-ramping to avoid currency and price exposure

Synota has no access to client funds or data
Transactional efficiency

Cross-border investment
Pay-as-you-go for Bitcoin Miners

Expenses are automatically deducted from daily mining rewards

Commercially available in the US

- Contracts settle in USD, service provider(s) receive bitcoin or USD
- Neutralizes counterparty risk and reduces collateral requirements
- Creates transparency and minimizes billing disputes
- Simplifies tax and accounting

Grow and strengthen Lightning

450-675* BTC/day *pre-halving
Frictionless Meter-to-Cash
Zero accounts receivable and better customer experiences

**post-pay status quo**

- Consume energy
- Month...
- Read meter
- Create invoice
- Send Invoice
- Balance sheet
- Income statement
- 30 days or longer...
- Rec.
cash
- Match invoice
- Apply funds
- Balance sheet
- Income statement
- Adjustments...
- Final settlement 60+ days after energy consumed

MicroStrategy World 2023
An Abundant Future Begins with Energy
Thank you, Michael Saylor!

founders + management
Austin Mitchell, PhD CEO
Alan Schroeder COO
Lisa Scott, JD, CPA CAO + General Counsel

engineering
Max Dignan Head of Technology
Colin, CISSP Principal Engineer
Allen Piscitello Senior Staff Engineer

support
Rob Barkley Business Development
Kevin Hallinan, PhD Impact Mining
Sarah Creager Marketing

advisors
Dan Schnitzer, PhD CEO Sparkmeter
Tankred Hase CEO [Stealth]
Dave Reim President Questline
Shawn Yeager Technologist
Alex Lyashok Partner, New Layer Capital

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