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A biweekly update on applications of blockchain technology in the energy industry

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There is a lot of buzz around blockchain technology and its potential to revolutionize a wide range of industries from finance and health care to real estate and supply chain management. Many institutions and companies are forming partnerships to explore how blockchain ledgers and smart contracts can be deployed to manage and share data, create transactional efficiencies, and reduce costs.

While virtual currencies and blockchain technology in the financial services industry have been the subject of significant debate and discussion, blockchain applications that could transform the energy industry have received comparatively less attention. Every other week, the K&L Gates' Blockchain Energizer will highlight emerging issues or stories relating to the use of blockchain technology in the energy space. To subscribe to the Blockchain Energizer newsletter, please click here.

Senate Committee on Energy and Natural Resources holds Hearing to Discuss Energy Efficiency and Cybersecurity of Blockchain Applications.

- The United States Senate's Committee on Energy and Natural Resources held a full committee hearing on August 21st exploring blockchain's energy efficiency and cybersecurity features. The Committee organized the hearing to evaluate how blockchain technology could impact electricity prices and could improve the cybersecurity features of the computing systems used to supply energy. In her opening remarks, Chairwoman Lisa Murkowski (R-AK) mentioned the growing concerns among public utility districts over the strain cryptocurrency mining can place on the grid. Senator Angus King (I-ME) asked the assembled witnesses, which included Claire Henly, the Managing Director of the Energy Web Foundation ("EWF"), to discuss blockchain's ability to increase grid efficiency. Senator Cortez Masto (D-NV) focused her questioning on the privacy and security of blockchain-based transactions.
- In her written testimony, Ms. Henly explained that the blockchain industry is reducing its energy usage by moving away from a "Proof-of-Work" ("PoW") consensus protocol to less energy-intensive protocols such as "Proof-of-Authority" ("PoA") and "Proof-of-Stake" ("PoS"). She explained to the Committee that a PoA protocol designates specified trusted entities to verify transactions whereas a PoS protocol allows network participants to validate transactions in proportion to how much of the network's digital currency they own. Unlike PoW, neither PoA nor PoS protocols require energy-intensive mathematical computations to verify transactions. Rather, PoA relies on its validators' reputations and rules governing how transactions are validated, and PoS requires participants to stake their digital currency, meaning they will lose their currency if they attempt to approve fraudulent transactions. Ethereum, the second most widely used blockchain, will adopt a PoS protocol in the near future, and EWF operates a PoA-based test network for the energy industry. Regarding cybersecurity, Ms. Henly testified that blockchain's distributed

nature, including its distributed consensus mechanism, can protect energy data and grid control systems by "ensur[ing] that there is no single point of failure . . . ."

- The Senate Committee hearing signals the growing interest among regulators and politicians in learning about the advantages and challenges blockchain poses for the energy industry.

Energi Mine and Jem Energy Partner to Incentivize Consumers to Reduce their Energy Use.

- Energi Mine — a blockchain platform designed to connect distributed energy resource suppliers and manufacturers, and other power sector participants to consumers — and Jem Energy, a UK-based solar battery storage manufacturer, have partnered to reward consumers for making energy efficient actions. Energi Mine aims to reduce carbon emissions by creating a self-perpetuating marketplace in which consumers are rewarded with "ETK" tokens for making low-carbon intensive choices, such as riding public transportation or purchasing solar energy battery storage equipment. Consumers can use these tokens to purchase products and services from Energi Mine's partners, such as Jem Energy. Consumers will now be able to purchase Jem Energy's batteries or solar panel installation services with ETK tokens, and will be rewarded with a few tokens for each transaction.
- In addition to Jem Energy, Simply EV, a UK-based electric vehicle charging equipment manufacturer, has agreed to allow its customers to purchase its products with ETK tokens. Each transaction in which an ETK token is used is recorded on Energi Mine's blockchain, thereby creating an immutable record. In the future, consumers will be able to exchange their ETK tokens for fiat currency and pay their utility bills, in total or partially, with the tokens.
- The ETK token potentially provides multiple benefits for Energi Mine's partners. First, by functioning as a loyalty rewards program, the ETK token incentivizes consumers to purchase goods and services from Energi Mine's partners, rather than their competitors. Second, the token could reduce settlement time of transactions because it operates on top of a blockchain. Third, Energi Mine's blockchain provides its partners with access to real-time consumer data, which could offer insights on the impact of the partnership on their sales. Ultimately, such a market's success depends on its network effects, which are directly related to the adoption of its digital currency.

Petroteq is Collaborating with MetzOhanian to Develop Blockchain Applications for Oil and Gas Blockchain PetroBLOQ.

- Petroteq Energy Inc., a Canadian oil and gas company, has partnered with MetzOhanian, a Texas-based software development firm, to design blockchain-based applications for PetroBLOQ. PetroBLOQ is a blockchain platform designed to manage oil and gas companies' supply chain operations. MetzOhanian will design applications to make PetroBLOQ's platform more transparent and efficient, thereby streamlining Petroteq's supply chain operations while improving Petroteq's ability to audit those operations. In addition to these improvements, Petroteq believes MetzOhanian can develop applications that will reduce administrative cost and allow it to more effectively "interface with . . . customers, vendors, and suppliers in real-time."
- Aside from improving its own supply chain operations, Petroteq believes that PetroBLOQ can facilitate information sharing between oil and gas companies. It also sees an untapped opportunity to establish a consortium that would use PetroBLOQ's platform to

increase efficiencies in surface oil sands mining. This development, in turn, could lead to greater demand to use PetroBLOQ's platform to coordinate remediation and clean up of contaminated sites as well as oil waste reclamation.

- A consortium of oil and gas companies using a blockchain-based platform could facilitate secure and real-time data sharing, thereby improving information in the oil and gas markets. Blockchain could also promote greater transparency into the clean up and remediation efforts such companies conduct, and improve those efforts by facilitating information sharing and providing access to accurate and up-to-date data.

China's Largest Electric Bus Operator to Raise Capital through Asset-backed Digital Products Distributed via Blockchain.

- China's largest operator of electric buses, the National Transportation Capacity Company ("NST"), has hired Seven Stars Cloud Group ("SSC") to raise $24 billion by 2021 so NST can upgrade its fleet to meet China's electric vehicle mandate. SSC will raise the capital by offering fixed income lease financing products, including tokenized products distributed through a blockchain platform.
- SSC will sell nearly $9 billion worth of traditional fixed income products in China over the next two and a half years. Over that time, SSC will sell asset-backed digital tokens to foreign investors. These tokens will operate on top of a blockchain, meaning they will exist solely on a blockchain and will be distributed over a blockchain, but they will represent ownership of physical assets. NST believes blockchain-based digitized asset trading will increase its liquidity by enabling it to divide its physical assets into fractions and trade them on a fast, secure, and immutable digital ledger.
- If successful, NST and SSC will demonstrate blockchain's capacity to increase the financial liquidity that can be generated through the sale of physical assets. This development may be particularly important for capital intensive industries like automobile manufacturers and operators.

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