

BLOCKCHAIN ENERGIZER VOL. 4

Date: 18 May 2017

Energy Alert

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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 healthcare to real estate and supply chain management. Reports estimate that over \$1.4 billion was invested in blockchain startups in 2016 alone, and 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](#).

ENERGY COMPANIES COME TOGETHER TO FUND A BLOCKCHAIN INITIATIVE FOR ENERGY

- A new organization has formed that will focus on the development of an energy-specific blockchain platform better-suited for the speed and volume of transactions in the energy industry. In a press release issued earlier this month, the Rocky Mountain Institute announced that several international energy companies joined together to raise approximately \$2.5 million in funding to support the Energy Web Foundation ("EWF"), a nonprofit organization formed to "accelerate the commercial deployment of blockchain technology in the energy sector." EWF was formed as a partnership between the Rocky Mountain Institute and Grid Singularity, a blockchain developer specializing in energy applications.
- As part of one of its first initiatives, EWF is working with Grid Singularity to develop an open-source, energy-specific blockchain platform that will be maintained by EWF and its affiliates. According to Ewald Hesse, the Vice President of EWF and Chief Executive Officer of Grid Singularity, the EWF blockchain is being designed specifically to support energy applications, ranging from utility billing and settlement to integration of distributed energy resources. When completed, the EWF blockchain should be able to process up to one million transactions per second, which will enable millions of distributed energy resources to transact amongst themselves and also be available to support the utility grid. Along with the energy-specific blockchain, EWF also plans to work on developing use cases and organizing task forces to develop proof of concepts and specific commercial applications for blockchain technology in the energy sector.

- Although actual applications may still be several years away, the funding of EWF and the development of an energy-specific blockchain platform are significant steps towards integrating blockchain technology into the electric power sector.

BLOCKCHAIN-POWERED DISTRIBUTED ENERGY PROJECTS LAUNCH IN THE NETHERLANDS AND GERMANY

- In Europe, utilities are also considering how blockchain software can be deployed to help stabilize and support existing grid infrastructure.
- TenneT, the national transmission system operator of the Netherlands, has partnered with the green energy company Vendebron to enlist electric vehicle ("EV") owners in a new pilot project, which would allow TenneT to store and dispatch power from EV batteries to balance grid supply and demand. All transactions between TenneT and EV owners will be recorded in a permissioned Hyperledger-powered blockchain network, which will allow participants on the network to view the total EV storage capacity available at any time, and will allow TenneT to act on this information in real-time to balance the grid.
- Similar technology is being developed in Germany through a partnership between TenneT and Sonnen in an effort to reduce regional grid overloads resulting from constraints on the transmission system. Using a blockchain-powered network, TenneT and Sonnen are working to develop a system that will allow grid operators to monitor and dispatch residential battery systems in real-time in order to reduce energy transportation bottlenecks on the power grid. The goal is to deploy a blockchain-powered network where battery systems, charging stations, and the transmission grid will communicate in real-time and automatically adjust to changes in grid status.
- These pilot programs are but two examples of a growing global effort to explore the viability of blockchain technology as a means of facilitating the integration of distributed energy resources and enabling real-time visibility and control of distributed energy resources to support the overall grid.

BLOCKCHAIN AS THE KEY TO PLATFORM-BASED ELECTRIC GRIDS?

- As platform-based business models, such as car-sharing apps, continue to reshape the modern economy, the discussion is heating up about what a platform-based electric grid might look like in the United States. For example, New York's Reforming Energy Vision proceeding has focused on transforming electric distribution companies into "Distributed System Platform" providers to support and incentivize deployment of distributed energy resources.
- In a recent article, the Rocky Mountain Institute outlined the possibilities and challenges surrounding the development of a platform-based electric grid. Among the identified challenges are questions about coordinating scheduling and dispatch and the variety of products, services, and revenue models that a distributed system platform could deploy.
- The Rocky Mountain Institute highlights blockchain-enabled systems as a way to solve some of these challenges. Blockchain's core features of a distributed, trusted, and immutable ledger with the ability to automatically execute transactions based on predefined triggers align nicely with the goals of a platform-based electric system capable of coordinating many resources and transactions.

- EWF and the TenneT pilot programs described above exemplify how companies are already beginning to look to blockchain-powered applications to address the challenges of a distributed grid. As these pilot projects are refined and begin to scale, expect to see such applications make their way to the U.S. transmission and distribution grid as well.

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