

## THE BLOCKCHAIN ENERGIZER

January 4, 2018

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## K&L Gates Blockchain Energizer – Vol. 20 – The Year in Review

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

**By Molly Suda and Ben Tejblum**

*In 2017, the Blockchain Energizer highlighted the latest developments in blockchain technology and use cases for the energy industry, covering everything from peer-to-peer energy trading platforms and financing platforms for renewable generation to commodity trading applications and emissions tracking systems.*

*To kick-off 2018, the Blockchain Energizer is breaking from its typical format to look back on trends and developments from 2017 and to look ahead to what is coming in 2018. In two weeks, we will be back to our normal format, highlighting recent developments relating to the use of blockchain technology in the energy space. To subscribe to the Blockchain Energizer newsletter, please click [here](#).*

### Blockchain Lights Up 2017

Last year proved to be a momentous year for the development of blockchain, both in terms of identifying and developing blockchain use cases for the energy industry and the tremendous investment in blockchain startups. To put 2017 into context, consider the following: by the end of 2017, [reports](#) estimated that private investment in blockchain companies exceeded \$4.5 billion, which far surpassed the estimated \$1.4 billion in blockchain investment in 2016. Perhaps even more dramatic was the explosion in funding through initial coin offerings (“ICOs”). According to [Coindesk](#), approximately \$295 million was raised through ICOs from 2014 through 2016. Comparatively, in 2017 alone, ICOs raised approximately \$3.4 billion.

Although blockchain investment occurred across many industries, the development of energy-focused blockchain applications was particularly notable over the course of the year. This was in part due to the founding and growth of several energy-specific blockchain companies and consortiums, as well as increased buy-in from energy companies, regulators, and governments around the world. While we highlighted several potential energy sector blockchain applications over the course of the year, here is our highlight list of trends and developments for energy-specific blockchain applications in 2017:

- **The Emergence of Blockchain to Facilitate Peer-to-Peer Energy Transactions:** Late in 2016, the Brooklyn Microgrid made headlines as one of the first pilot programs to test blockchain’s ability to facilitate peer to peer energy transactions. The premise was to use a blockchain-powered network, coupled with smart technology like smart meters or smart inverters, to create a secure, peer-to-peer marketplace where consumers can monitor their energy consumption, respond to favorable price signals, and sell excess energy produced by rooftop solar arrays or other distributed generation resources. While it may have been one of the [first pilot programs](#) to test blockchain in a peer-to-peer setting, by the end of 2017 the Brooklyn Microgrid was just one of many announced blockchain

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projects designed to facilitate peer-to-peer energy transactions. LO3 Energy, the company behind the Brooklyn Microgrid, partnered with local entities to [develop a pilot program](#) for peer-to-peer transactions in Australia. Similar blockchain-powered platforms are now also being developed and tested by companies in [Africa](#), [England](#), [India](#), [Japan](#), and [South Korea](#). Notably, developing these pilot programs was often facilitated by government support, either in the form of grant money or regulatory “sandboxes” to relax certain rules or requirements.

- **Greater Utility and Energy Company Involvement:** 2017 was also notable due to the significant increase in the number of major utilities and energy companies involved in developing and testing blockchain applications. In [Europe](#) and [Asia](#), energy companies and grid operators initiated pilot programs aimed at testing how blockchain could both balance the transmission grid and integrate distributed energy resources to reduce congestion. Additionally, in May 2017, twenty-three different European energy companies signed on to conduct peer-to-peer wholesale trades of electricity and natural gas on blockchain developer PONTON's [Enerchain](#) platform. By November, thirty-nine companies had agreed to participate. Finally, in the United States, the Rocky Mountain Institute partnered with a group of international energy companies to fund the [Energy Web Foundation](#) (“EFW”), a nonprofit organization that was formed to accelerate the commercial deployment of blockchain in the energy sector, and which, as noted below, is developing the first-energy specific blockchain platform.
- **The Development of an Energy-Specific Blockchain.** Perhaps one of the most exciting developments in 2017 was the [announcement](#) and [initial release](#) of EWF's energy-specific blockchain network (the “EFW Blockchain”). As we [discussed](#) in the Energizer, wide scale implementation of blockchain technology in the energy sector faces numerous challenges, including the need for uniform standards and interoperability between platforms and the need for a blockchain platform that can process the large number of transactions associated with commercial-scale energy trading and management platforms. The EWF Blockchain aims to solve the latter problem and is being designed to process up to one million transactions per second (by comparison, the Bitcoin Blockchain currently processes up to seven transactions per second). The EWF Blockchain entered its first phase of public testing in November 2017 and will enter beta phase in 2018.

### Looking Forward – What to Expect in 2018

While the trends highlighted above are likely to continue, 2018 will also see pilots and proofs of concept move towards commercialization, raising broader questions about scalability, standardization, interoperability, and integration across different blockchain platforms. With that in mind, we will be tracking the following items in 2018:

- **Pilot and Proof of Concept Results.** In 2018, expect to see news and lessons learned from the many pilots that launched in 2017. For example, the [pilot project](#) launched by TenneT, the national transmission system operator of the Netherlands, to test the use of blockchain technology to stabilize and balance the power grid is expected to run until the middle of 2018. A blockchain [platform designed specifically for physical energy commodities trading](#) is expected to be operational by the end of 2018. And, finally, as noted above, the EWF Blockchain is expected to enter a beta phase in April 2018. We anticipate that each of these projects will offer valuable insights into how best to roll out and commercialize future blockchain platforms.
- **Shift Toward Commercialization.** With use cases tested and identified and continued advances in blockchain technology, companies will also look to shift away from proof of concept pilot programs and towards commercialization in 2018. Blockchain developer

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[ImpactPPA](#), which is launching a network designed to facilitate funding and deployment of renewable energy projects and promote distributed energy transactions, plans to install its first projects in the second quarter of 2018. [Grid+](#) aims to use an Ethereum-based blockchain and a “smart energy agent” to facilitate the retail sale of electricity. Focusing first on the deregulated Texas market, [in 2018](#) Grid+ plans become a licensed retailer and hopes to sign up over 5,000 customers.

- **Collaboration and Coordination on Standards Setting.** As we have [repeatedly noted](#) in the Blockchain Energizer, to capitalize on the network effects of blockchain technology, energy industry participants and blockchain developers will need to collaborate to develop standards and interoperability protocols. While 2017 saw the formation of several consortia and working groups, the work of coordinating disparate interests and defining widely accepted standards will get underway in 2018. For example, in December 2017, the Enterprise Ethereum Alliance [announced](#) the launch of a new Energy Working Group that will focus on “defining standards around Ethereum blockchain implementations for oil and gas, mining, refining, trading, utilities, grids and other verticals within the energy industry.”
- **Legislative and Regulatory Focus.** Legislators and regulators largely used 2017 to learn about blockchain technology and its potential. An open question for 2018 is whether that education in 2017 will translate to new policies and regulations in 2018. An early sign of congressional interest was included in the [2018 National Defense Authorization Act](#) that was signed into law on December 12, 2017. The Act directs the Secretary of Defense, within 180 days of enactment, to provide a report to Congress on (i) the potential offensive and defensive cyber applications of blockchain technology and other distributed database technologies; (ii) an assessment of efforts by foreign powers, extremist organizations, and criminal networks to utilize these technologies; and (iii) an assessment of the use or planned use of blockchain technologies by the United States Government or critical infrastructure networks and the vulnerabilities of such networks to cyber attacks. As we’ve [previously highlighted](#), in September 2017, the Department of Energy awarded several firms and government organizations funds to develop blockchain cybersecurity technology to help secure distributed energy resources.

Stay tuned to the Blockchain Energizer as K&L Gates will continue to track these developments throughout 2018.

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