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A biweekly update on blockchain technology applications, distributed energy resources, and other innovative technologies in the energy sector.

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There is a lot of buzz around blockchain technology, distributed energy resources ("DERs"), microgrids, and other technological innovations in the energy industry. As these innovations develop, energy markets will undergo substantial changes to which consumer and industry participants alike will need to adapt and leverage. Every other week, K&L Gates' The Energizer *will highlight emerging issues or stories relating to the use of blockchain technology, DERs, and other innovations driving the energy industry forward. To subscribe to* The Energizer *newsletter, please click here.*

Softbank Vision Fund Invests $110 Million in Energy Vault's Gravity Storage Plants.

- On August 14, 2019, Energy Vault announced it closed a Series B financing round to fund its development of gravity storage plants with a $110 million investment from SoftBank Vision Fund. Gravity storage plants are automated structures that use advanced software, composite bricks, and cranes to store energy and generate electricity in a similar manner as hydro plants. Each plant is comprised of a 35-story, six-armed crane and thousands of 35-ton concrete blocks. During periods of cheap or excess renewable electricity, the crane lifts the concrete blocks and stacks them into a tower. Energy is stored in the elevation gain. Once the blocks are stacked into a tower, during periods of high energy demand the crane removes the blocks, returning them to the ground. The kinetic energy from dropping the blocks to the ground is converted into electricity.
- Energy Vault believes that its standard plant can generate 35 megawatt-hours of storage. This is significantly greater than the capacity provided by lithium-ion batteries, which are often designed for four hours of cost-effective duration. The company predicts costs will range from $200 to $250 per kilowatt-hour, approximately half of the upfront cost of conventional storage, and contends that the plants will be able to operate fully automated for decades with little deterioration. Energy Vault hopes gravity storage will allow renewables to deliver baseload power for less than the cost of fossil fuels at any time of day.

Omega Grid Trial will Use Blockchain to Connect Electric Vehicles and Solar Generators.

- On August 21, 2019, trade press reported that Omega Grid, the Sacramento Municipal Utility District, and Electricite de France (collectively, the "Parties") will use Omega Grid's blockchain platform to facilitate the use of energy stored in solar panels for electric vehicle

("EV") charging stations. The trial, which will be partially funded by the American Public Power Association, will be conducted outside of Sacramento, California, later this year.

- Through the trial, the Parties seek to demonstrate that solar power from household solar panels can be deployed to EV charging stations without necessitating significant modifications to a local electric grid's infrastructure. By minimizing infrastructure costs, the Parties hope the trial will persuade utilities to incorporate distributed ledger technologies into their existing grids, at least to better integrate EV charging stations.
- As the demand for EVs continues to grow, utilities will need to develop and deploy more cost-effective and comprehensive integration strategies to effectively maintain energy demands, and to leverage distributed energy resources and storage technology.

Study Describes How to Effectively Move Existing Energy System onto a Blockchain Platform.

- On August 14, 2019, researchers from the University of Waterloo published a study entitled *Mitigating Trust Issues in Electric Vehicle Charging using a Blockchain*, describing how a blockchain-based EV charging system could bridge the trust divide between charging service providers, property owners, and EV owners, thereby facilitating a robust and cost-efficient EV charging market. According to the study, there are three necessary steps to incorporate blockchain technology into this energy ecosystem. First, identify the parties involved and the reasons for any lack of trust between them. Second, create a blockchain platform to create a system in which trust between the parties is not required, and use smart contracts to automate transactions on that blockchain. The system should also mimic existing interfaces for minimal disruption. Third, migrate the legacy system onto the blockchain platform iteratively over time.
- According to the researchers, incorporating machine-to-machine communication on such a platform could have important implications. For instance, an autonomous vehicle could automate its recharging process through such a system. Such a vehicle could detect its need for power, drive to the nearest charging station, and communicate with the charging station through the blockchain platform to which the station and the vehicle are connected. Autonomous vehicles, blockchain, and smart contracts, therefore, could have the potential to automate an important and growing sector of electricity demand: EVs.

Hawaiian Electric Seeks Bids for 900MW of Renewable Energy and Energy Storage Projects.

- Last week, Hawaiian Electric issued a request for proposals for 900 megawatts ("MW") of renewables, energy storage, and grid services. Specifically, the request seeks proposals for "technologies equal to 594 MW of solar for Oahu, 135 MW for Maui and up to 203 MW for Hawaii Island." The new energy sources are needed because the AES Hawaii coal-fired power plant is scheduled to close in 2022, and the oil-fired Kahului plant on Maui is scheduled to close in 2024. The coal-fired plant serves about 16 percent of Oahu's peak demand.
- Hawaiian Electric initiated this request, its "largest procurement effort," to help further the state's goal of supplying 100 percent renewable energy by 2045. By the end of the year, renewable generation will reportedly make up one third of Hawaiian Electric's generation portfolio. Alan Oshima, president and CEO of Hawaiian Electric, explained that "[t]his effort is a big step in accelerating the transition from fossil fuels to locally-sourced clean energy resources. For customers, the benefits are simple: cleaner energy at lower prices."

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