PROMISING BLOCKCHAIN APPLICATIONS FOR ENERGY:
SEPARATING THE SIGNAL FROM THE NOISE

CREA Energy Innovations
Summit

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Our Mission and Operating Principles

Our Mission: Harnessing the Power of Innovation to build a secure, affordable, low-carbon energy future.

Our Organization: EFI is a District of Columbia Non-profit Corporation

Our Scope of Activities:

➢ Analyzing global energy systems and policies
➢ Advancing energy technology innovation
➢ Promoting a 21st century clean energy workforce
➢ Convening stakeholders to educate and forge understanding
➢ Securing energy infrastructures against virtual and physical risks

Our Outreach:
What is Blockchain?

Blockchain is an open, continuously growing distributed database.

Processes and tracks transactions between contributors without a central administrator.

Participants in a blockchain each keep a replica of the ledger and updates through consensus protocol.

Transactions are secured with cryptography, making it difficult to falsify records.

Blockchain ledger is replicated on all computational nodes within the network, so there is no single point of failure.

Source: “A Roadmap for Implementing Blockchain at Con Edison,” May 2018
How Does Blockchain Work?
Adding new transactions to the blockchain is a relatively straightforward interaction between independent computers that verify each transaction and then add them to the immutable chain.

1. Someone requests a transaction (cryptocurrency, contract, other information)
2. The request is broadcast to a P2P network of computers, called “nodes”
3. The network validates the transaction and the user’s status using algorithms
4. Once verified, the transaction is combined with others to create a new block of data for the ledger
5. The new block is then added to the existing blockchain, in a way that is permanent and unalterable

Other sources: Blockgeeks, Nounproject
How Does Blockchain Compare to Conventional Business Transactions?
Blockchain helps streamline traditional business processes in terms of cost and time by reducing the need for intermediaries and acting as a single permanent record of the transaction.
Energy Sector Blockchain Projects
EV Markets/ Transmission Balancing
Blockchain can support the growth of EV markets by incentivizing owners of private chargers to bring them online for public use and by assisting grid operators to better manage EV demand on the grid.
Distributed Energy Resources
Blockchain can be integrated into DERMS to create new mechanisms for managing DER resources in real-time with smart contracts, verifying resource identify, and enhancing situational awareness of DER entity intentions.

Source: Adapted from Kley, Holger, “What is a Distributed Energy Resource Management System?”