



energy web

Applying Decentralized Tech in the Energy Sector

CIGRE & FISE Academic Event - Colombia

18 November 2021



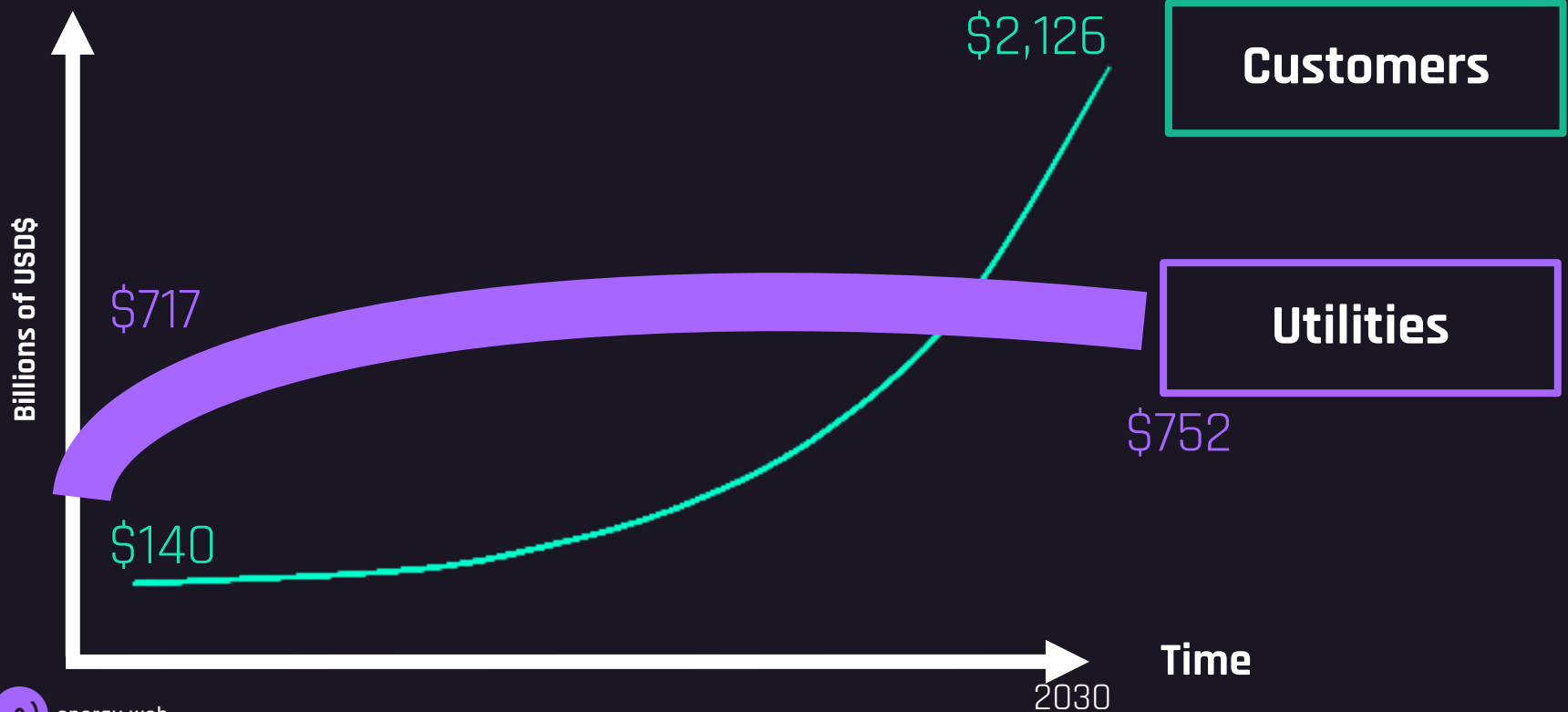
Energy Web was launched to help energy market participants digitize their systems in order to accelerate decarbonization

Energy Web at a glance:

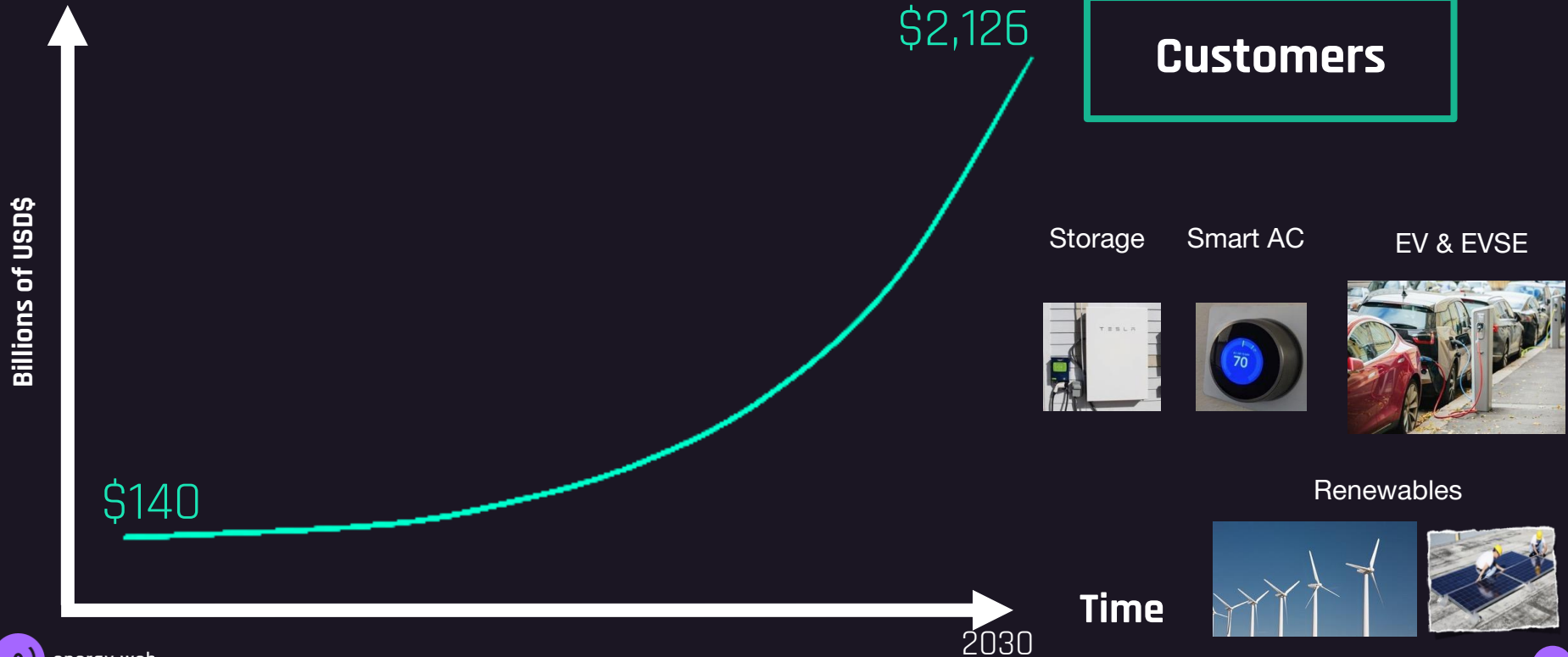
- International nonprofit organization
- Mission: develop and deploy an open-source operating system in support of a low-carbon energy future
- Est. 2017
- Founded and spun out of Rocky Mountain Institute



Context: customer spend on clean energy is on track to eclipse utility spend on all energy



Customers are investing in clean energy assets. These assets are the future of the energy sector



However, there's a fundamental challenge: clean energy assets are not integrated with market participant operating systems. We solve this problem via digital, open source infrastructure



20th Century Model: centralized, top-down registration and operation of a small number of large fossil-fuel assets

21st Century Model: enable any clean energy asset owned by any customer to participate in any energy market

Energy Web builds solutions with these organizations in two primary domains. Our focus for today is on distributed energy resource (DER) management.

Digitizing and integrating distributed energy resources to electricity markets

- Decentralized data exchange
- Enterprise identity and access management for IOT

Enhancing traceability of low carbon products

- 24/7 renewable energy matching
- Sustainable aviation fuel certificate issuance / tracking
- Green hydrogen certificate issuance / tracking

Grid operators are our primary customers. We partner with aggregators, OEMs, tech companies, and gentailers to bring solutions to market.

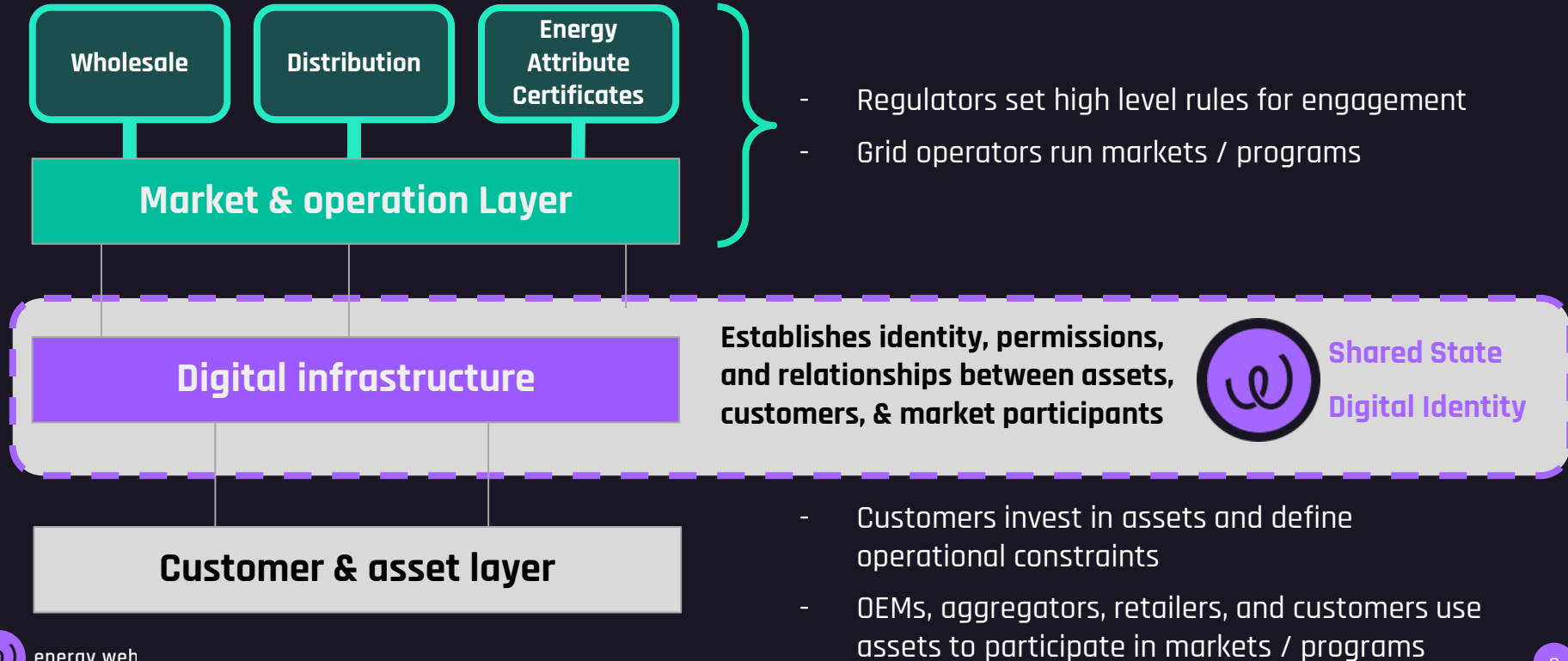
Customers



Partners

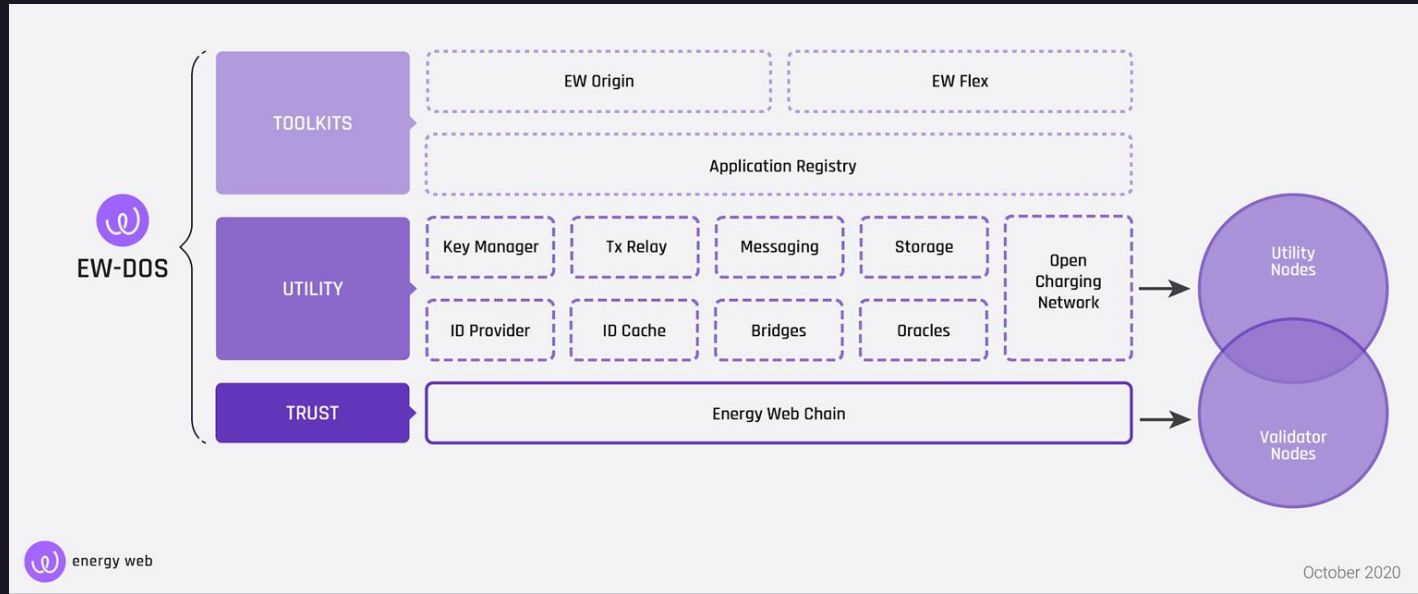


Open-source digital infrastructure makes it possible for customer owned assets to enroll and participate in coordinated grid operator programs




The public infrastructure is the Energy Web Decentralized Operating System, an open source stack collectively owned & operated by the energy industry

Digital infrastructure layer



It works by assigning all customers, assets (e.g., smart home, battery, electric vehicle) and market participants a digital identity

Jones Residence Energy Storage System



IDENTITY

A Asset Type VERIFIED? <input checked="" type="checkbox"/>	L Location VERIFIED? <input checked="" type="checkbox"/>
M Model # VERIFIED? <input checked="" type="checkbox"/>	kW Capacity VERIFIED? <input checked="" type="checkbox"/>
kWh Energy VERIFIED? <input checked="" type="checkbox"/>	kW / MIN Ramp Rate VERIFIED? <input checked="" type="checkbox"/>

APPLICATIONS & ENROLLMENTS

- Wholesale Market
 - Energy
 - Ancillary Services
- Distribution Market
 - Critical Peak Rate
 - Virtual Power Plant
 - Smart Charging

SERVICES

<input type="checkbox"/> Key Manager	<input checked="" type="checkbox"/> Tx Relay
<input checked="" type="checkbox"/> Messaging	<input type="checkbox"/> Storage
<input checked="" type="checkbox"/> ID Provider	<input type="checkbox"/> ID Cache
<input type="checkbox"/> Bridges	<input type="checkbox"/> Oracles

Digital identities are constructed using a new technology called “decentralized identifiers” (DIDs)

A DID is a persistent, tamper-proof identity.

Each DID acts as a “portfolio” of information about a given customer, asset, or market participant.

This portfolio can hold technical, locational, relational, and/or historical information.

Each item of information is verified by other actors via cryptographic claims and proofs.

This creates certainty that portfolio contents are accurate.

Jones Residence Energy Storage System



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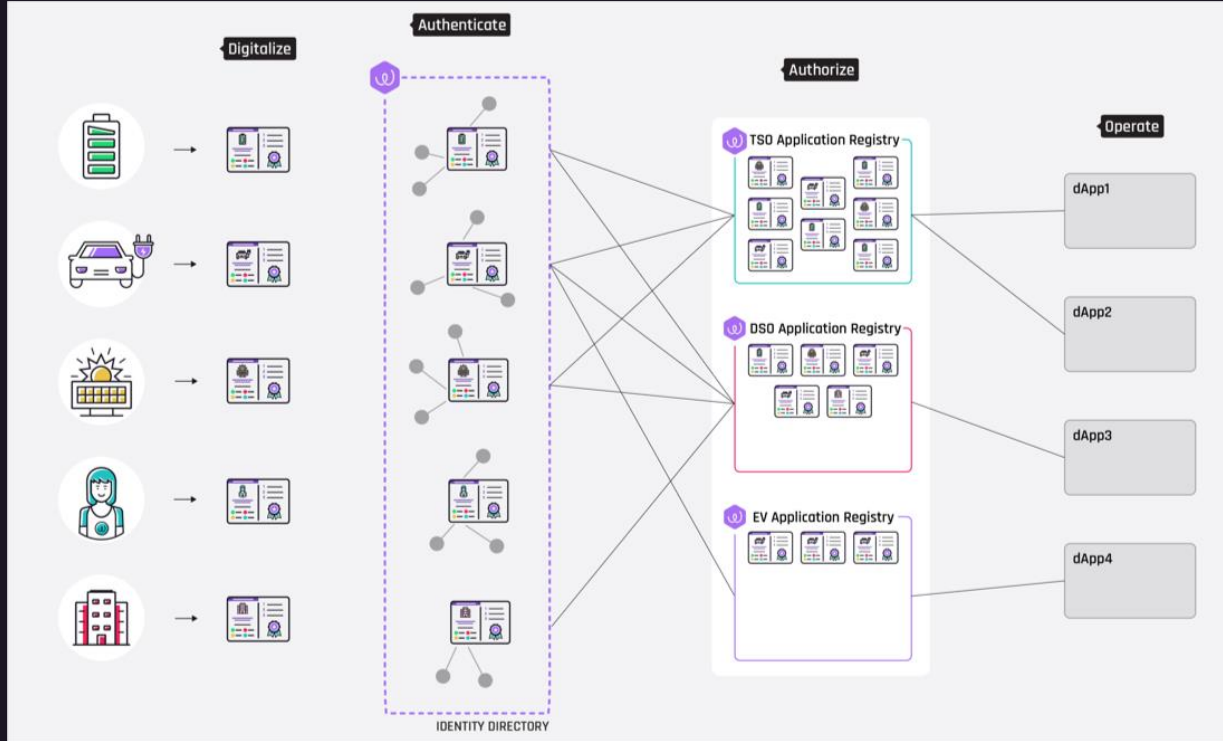
APPLICATIONS & ENROLLMENTS

- 1 Wholesale Market
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 - Ancillary Services
- 2 Distribution Market
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- | | |
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**DIDs are permitted to enroll to multiple systems / markets / programs.
Single sign-on for energy is a useful analogy.**



The Crypto Climate Accord (CCA) is a private sector-led initiative to decarbonize the crypto sector with open-source decentralized tech and standards

Conveners



Open-source tech development



Good market practices



Regulatory engagement

CCA Community



A “big tent” welcome to all that currently includes 160+ Supporters, of which 80+ are also Signatories

Solutions & Showcases

The CCA community is building an open-source solutions toolbox to decarbonize crypto miners, exchanges, investors and to prove progress

Calculate energy use & GHG impacts

Digitized renewables & carbon offsets procurement

Proof of green verification

Crypto Miners

Crypto Exchanges / Platforms

Crypto Investors / Holders

Various solutions and related showcases for BTC, ETH, and Alt Coins / Blockchains



Thank you!

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