

# ADVANCED ENERGY RESILIENCE TECHNOLOGIES

Presentation for the New Mexico State Legislature Science,  
Technology And Telecommunications Committee – Oct 27<sup>th</sup>, 2021



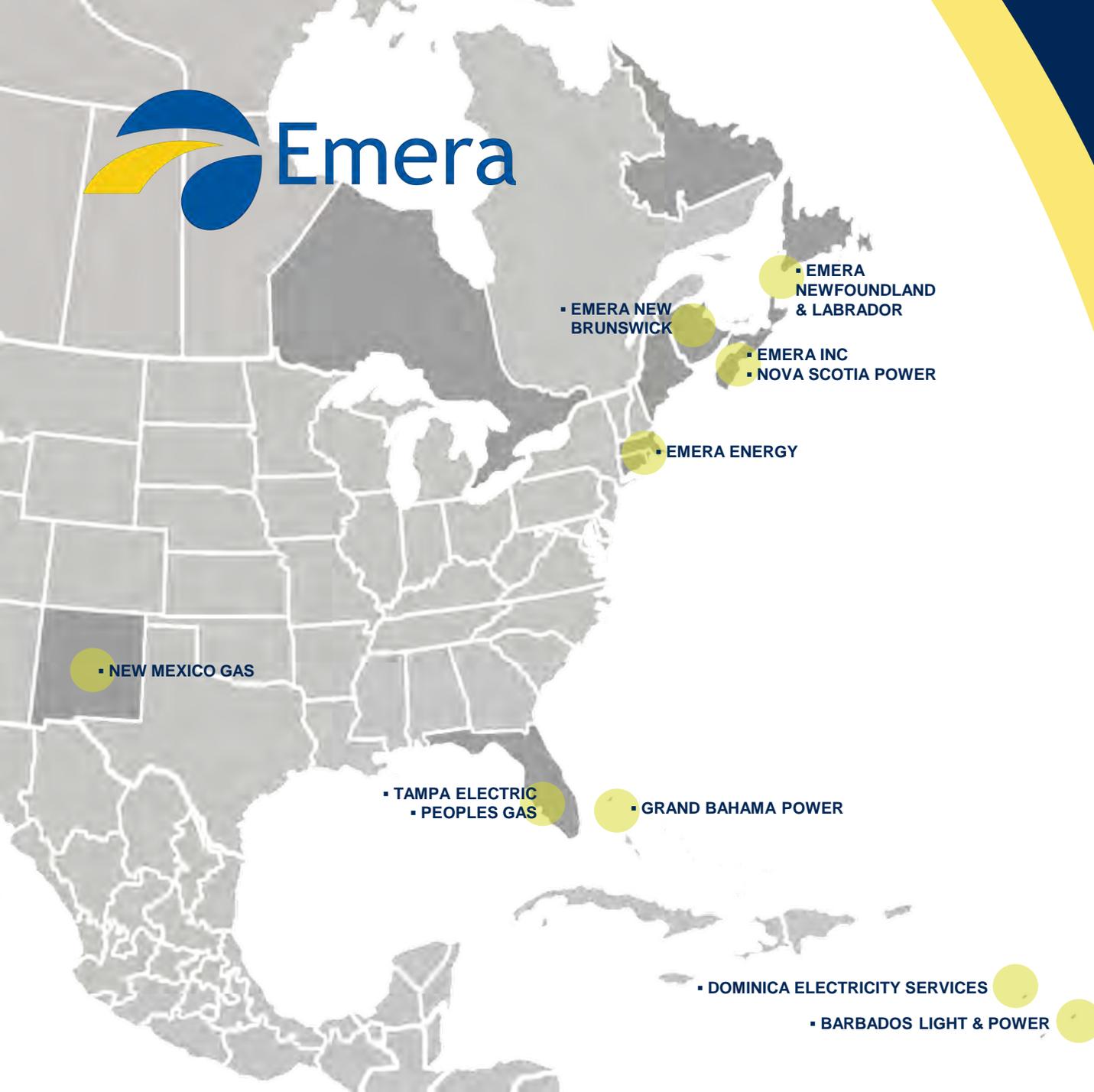
Gary Oppedahl  
VP of Emerging Technology  
Emera Technologies



A Utility-Owned Rate Based Microgrid

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# Emera Technologies

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Emera, a \$32 billion energy company, created its skunk works division to understand the disruptive forces in energy and their impacts on the industry.

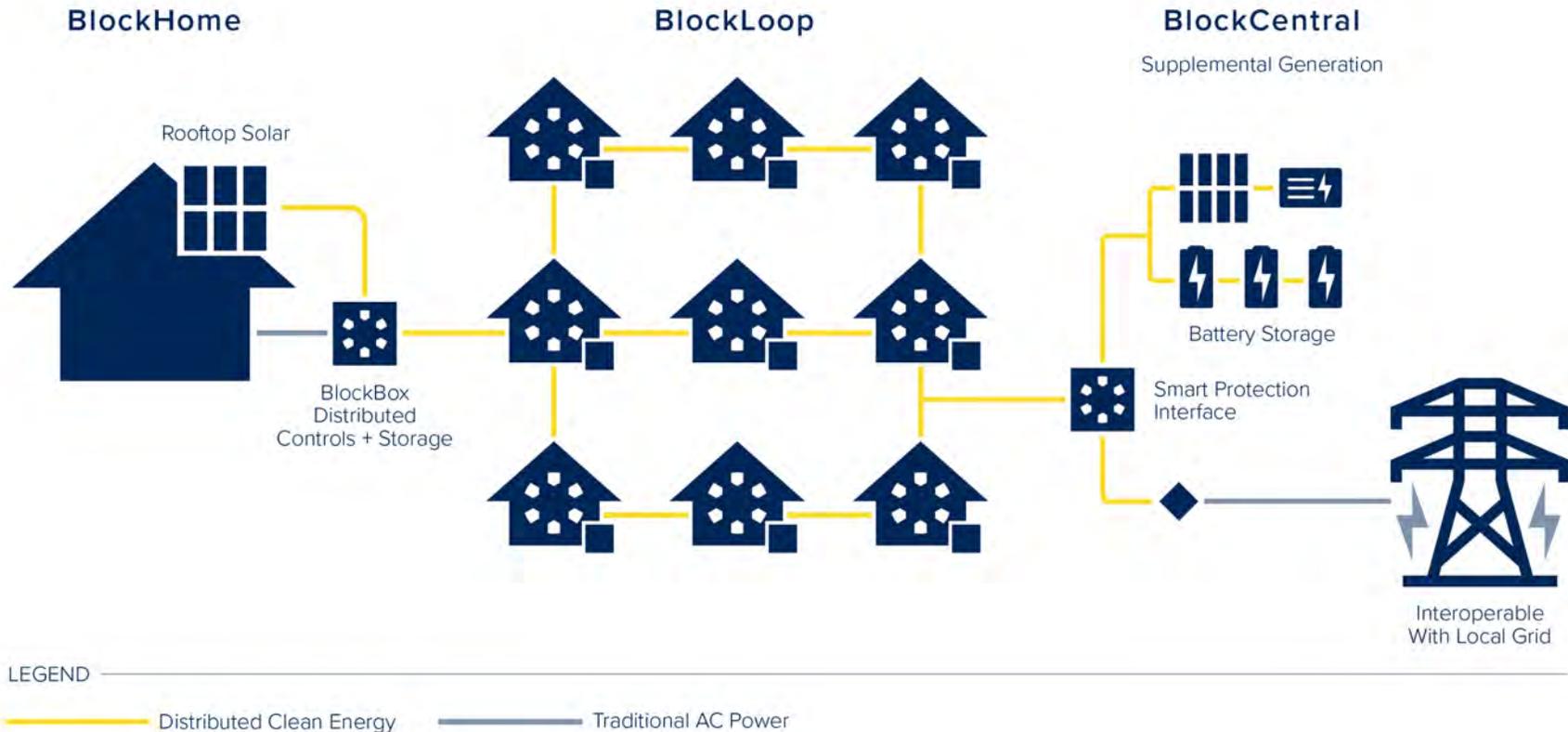
Business, residential, and military customers want cleaner and more reliable energy as we become more dependent on energy for daily and critical needs.

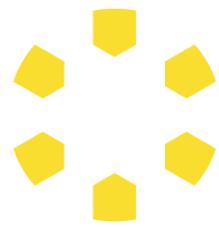
New technologies are opening transformational opportunities in the energy landscape.



## A New Rate-Based Distributed Energy System for the Electric Utility

Utilities can own and operate this local renewable energy system as a grid asset.  
Create energy locally, store it locally and distribute it locally on a data-rich digital platform.  
Cleaner energy with advanced resilience for your communities.



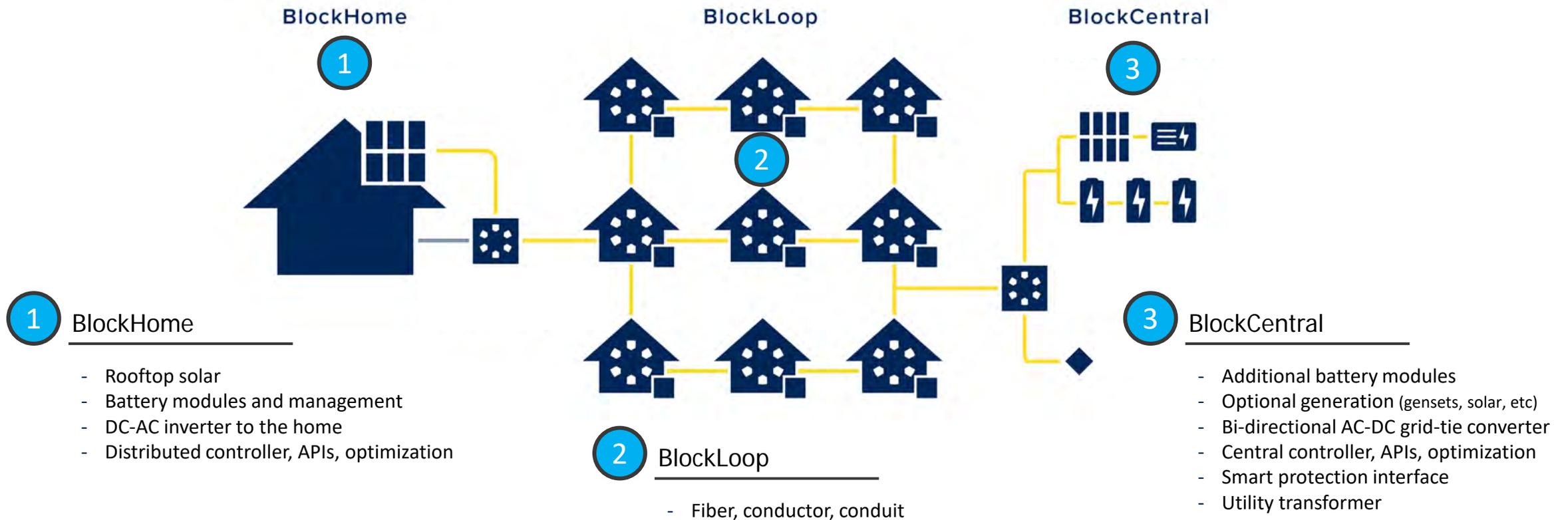


# BLOCKENERGY™

SMART PLATFORM

## A Simple Kit of Parts

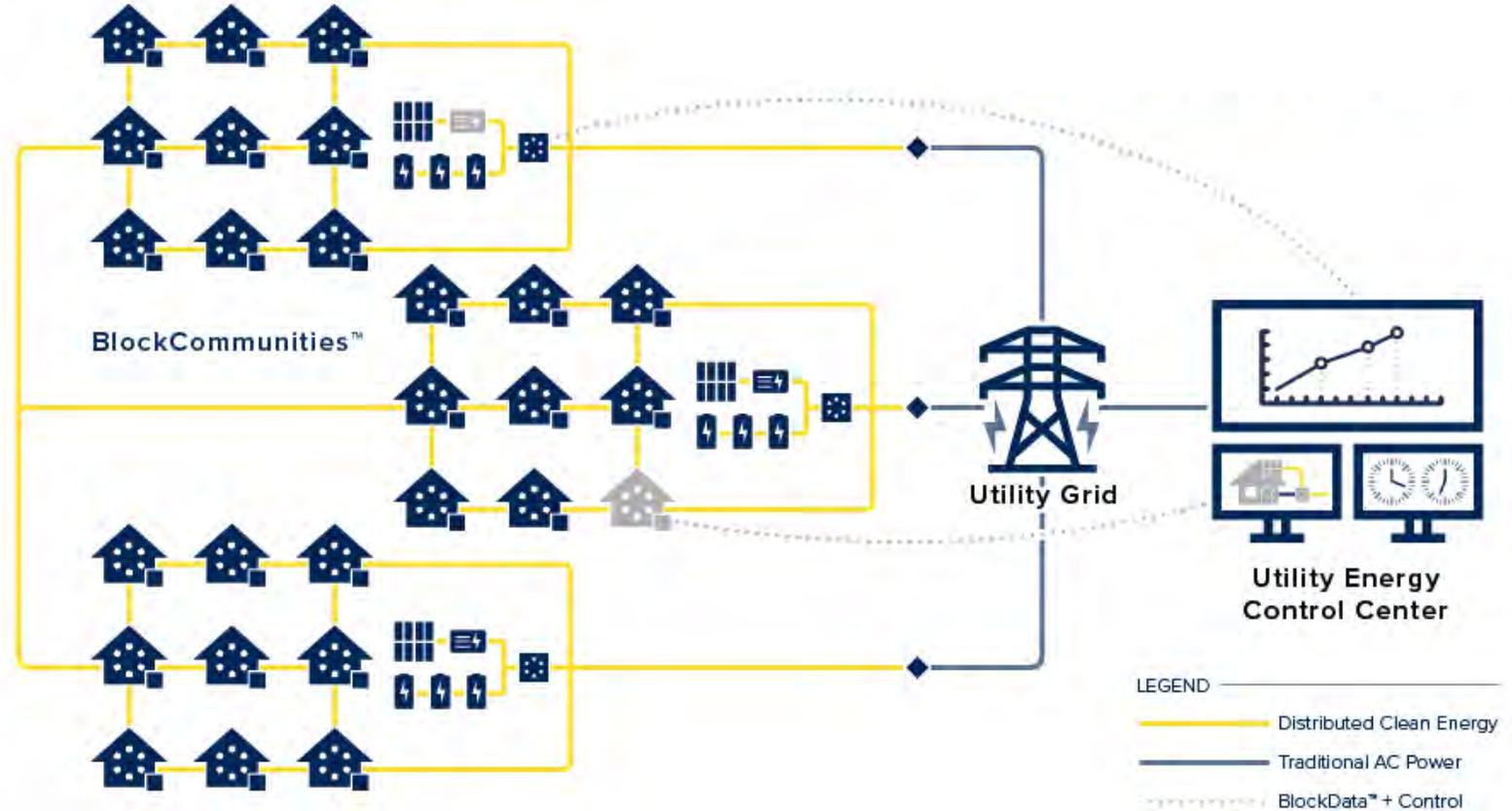
**BLOCKENERGY's** modular microgrid builds and bolts seamlessly like building blocks. The infrastructure and design have all been tested and trailed in various applications for safety, reliability, and interoperability to make it the most advanced solar and storage community in market.



The BLOCKENERGY Platform Offers Seamless Growth

New **BLOCKCOMMUNITIES** can be seamlessly added to the platform as communities grow.

# THE NEW COMMUNITY ENERGY CONCEPT



SALT LAKE CITY

OMAHA

CINC

STORM TEAM 8 STORM TRACK LIVE

- WINTER STORM WARNING
- WINTER STORM WATCH
- WINTER WEATHER ADVISORY

## Winter Storm Uri – February 2021

- 702 Deaths
- Statewide power outages, food/water shortages
- 4.5 million homes and businesses were left without power
- Texas power grid was "seconds or minutes away from" complete failure

ALBUQUERQUE

LUBBOCK

DALLAS

JACKSON

EL PASO

SAN ANGELO

HOUSTON

NEW ORLEANS

DENIX

# New Mexico Can be a National Security Model

## Leadership in Clean Energy, Water Security, Education, and Job Creation



### RESILIENT ENERGY:

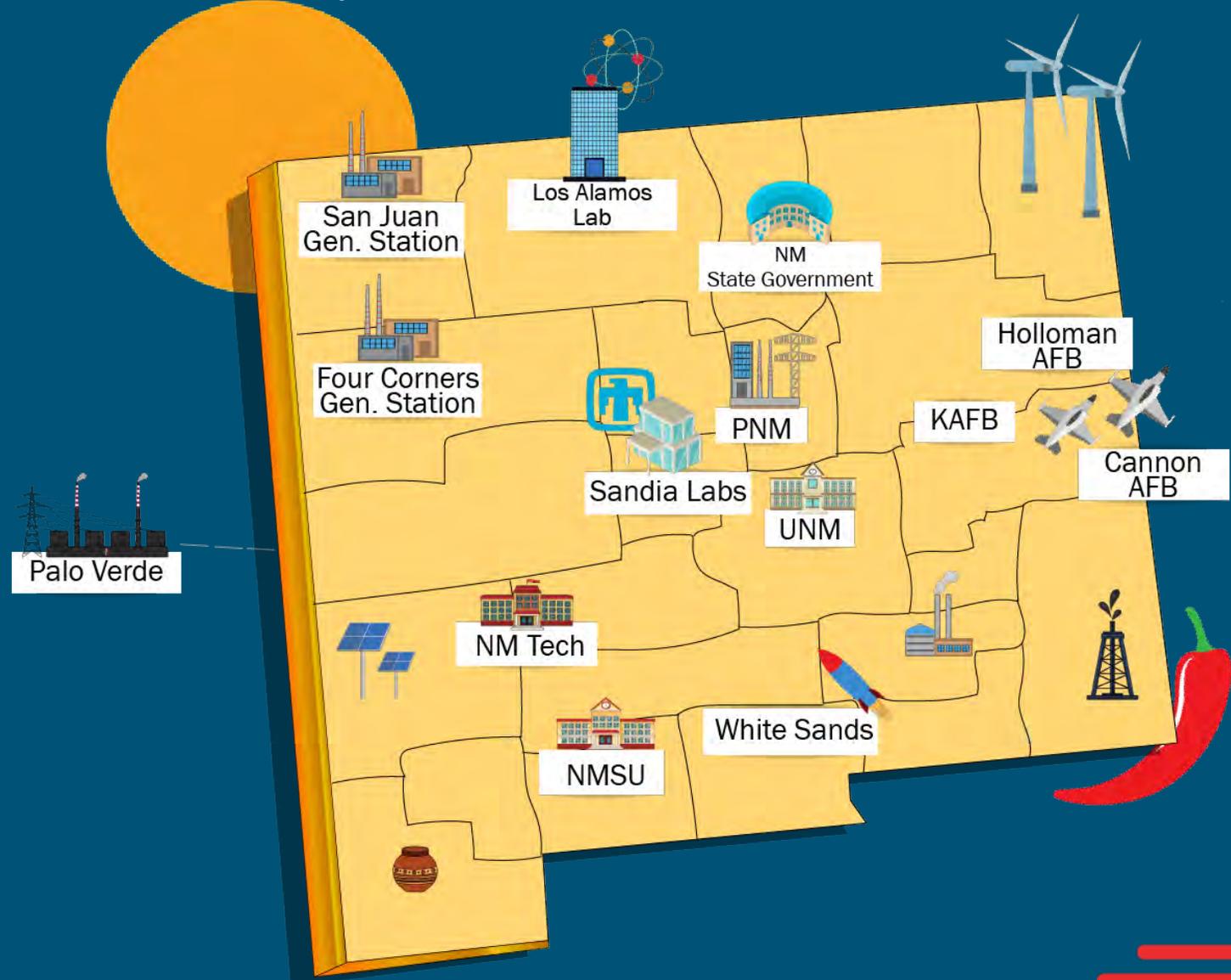
- Physical Security
- Cyber Security
- Energy/Resource Security

### TECHNO-ECONOMIC APPLICATIONS:

- Energy Storage
- Microgrids
- Blackout Recovery
- Fossil Retirement
- Renewables Integration
- Energy/Water Infrastructure
- Disaster Response (natural/human caused)
- Transportation
- Hydrogen

### BUILDS ON SANDIA WORK:

- California
- Alaska
- Hawaii
- Puerto Rico/US Virgin Islands
- Texas





# History and Evolution of BlockEnergy



## 2019

Developed, built and installed first DC microgrid on Department of Defense site at Kirtland Air Force Base in NM. Has been operating seamlessly since installation. Now in discussion for three additional microgrids on base.



## 2020

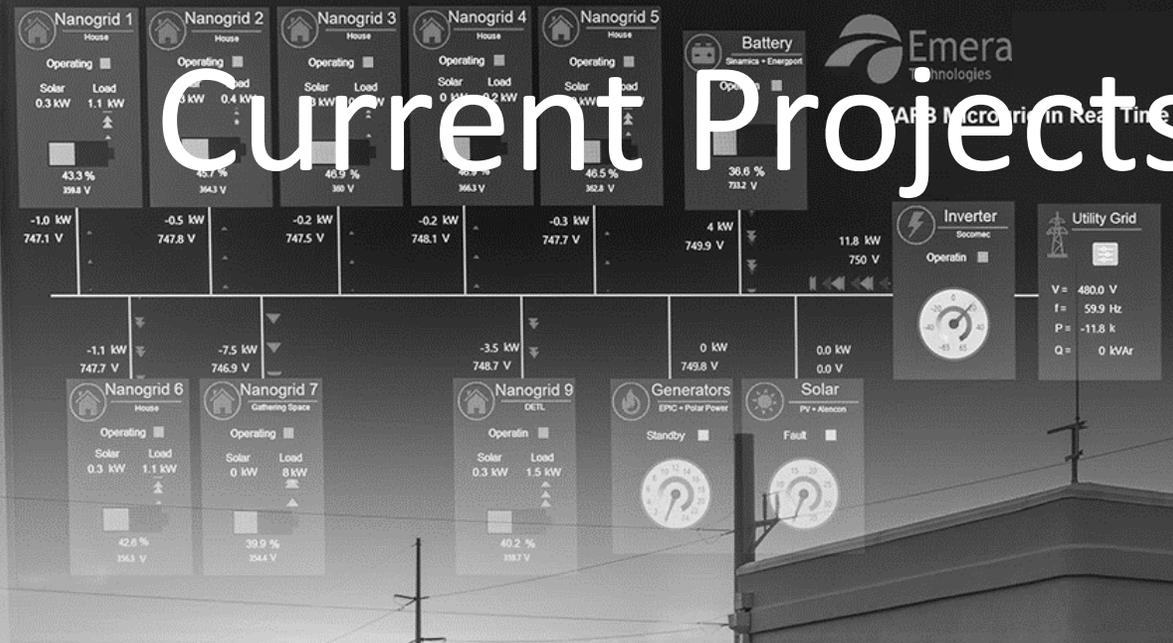
Developed and built V2 of the BlockEnergy Smart Platform. TÜV Rheinland conducted product testing review. Secured UL Certification. Launched BlockEnergy Smart Platform at NA Smart Energy Week. Secured first pilot with Lennar, largest residential builder in U.S.



## 2021

Commissioned BlockEnergy in 37 Home Lennar Neighborhood at Southshore Bay South Tampa. Installed second project at Silver Cloud Winery in California. Advanced development of V3 product, the first fully commercial version.

# Current Projects — Kirtland AFB



## Proof of Concept: Kirtland Air Base

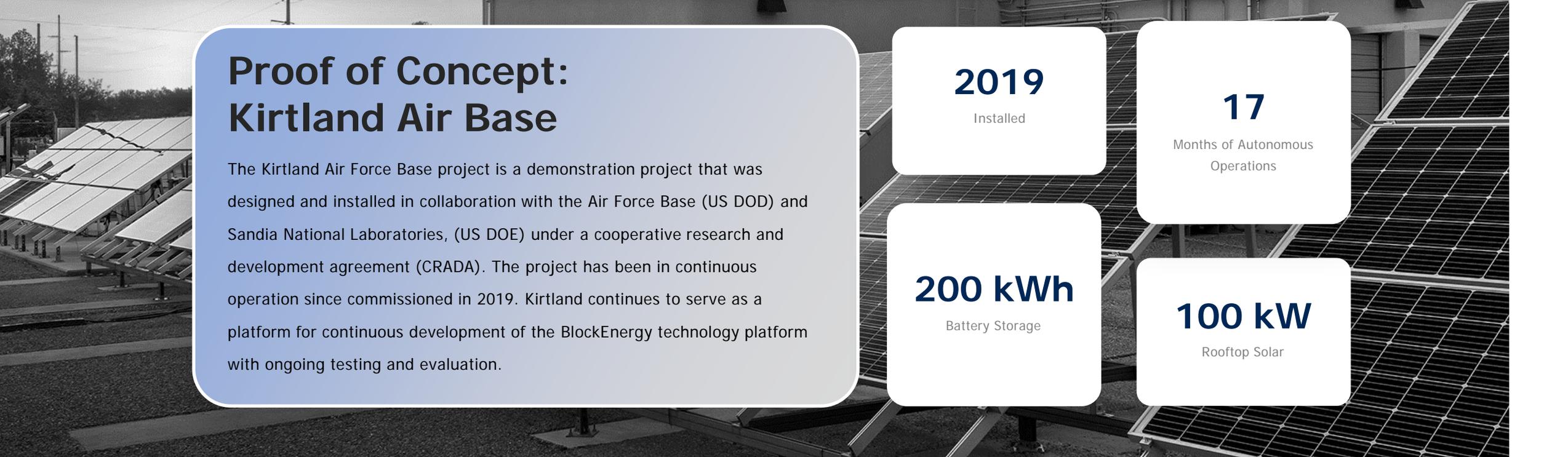
The Kirtland Air Force Base project is a demonstration project that was designed and installed in collaboration with the Air Force Base (US DOD) and Sandia National Laboratories, (US DOE) under a cooperative research and development agreement (CRADA). The project has been in continuous operation since commissioned in 2019. Kirtland continues to serve as a platform for continuous development of the BlockEnergy technology platform with ongoing testing and evaluation.

**2019**  
Installed

**17**  
Months of Autonomous Operations

**200 kWh**  
Battery Storage

**100 kW**  
Rooftop Solar



Neighborhood

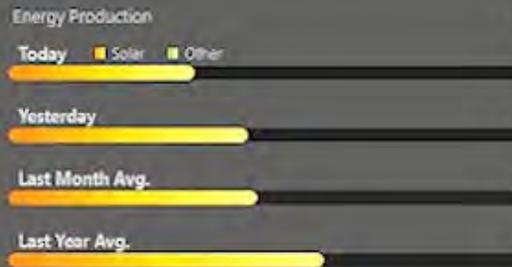
**12** Kirtland AFB  
Albuquerque NM  
87106  
Solar Capacity 67.32 kw

**251.41**  
Tons of Co2 Avoided

Neighborhood Dashboard



Neighborhood Overview



Home

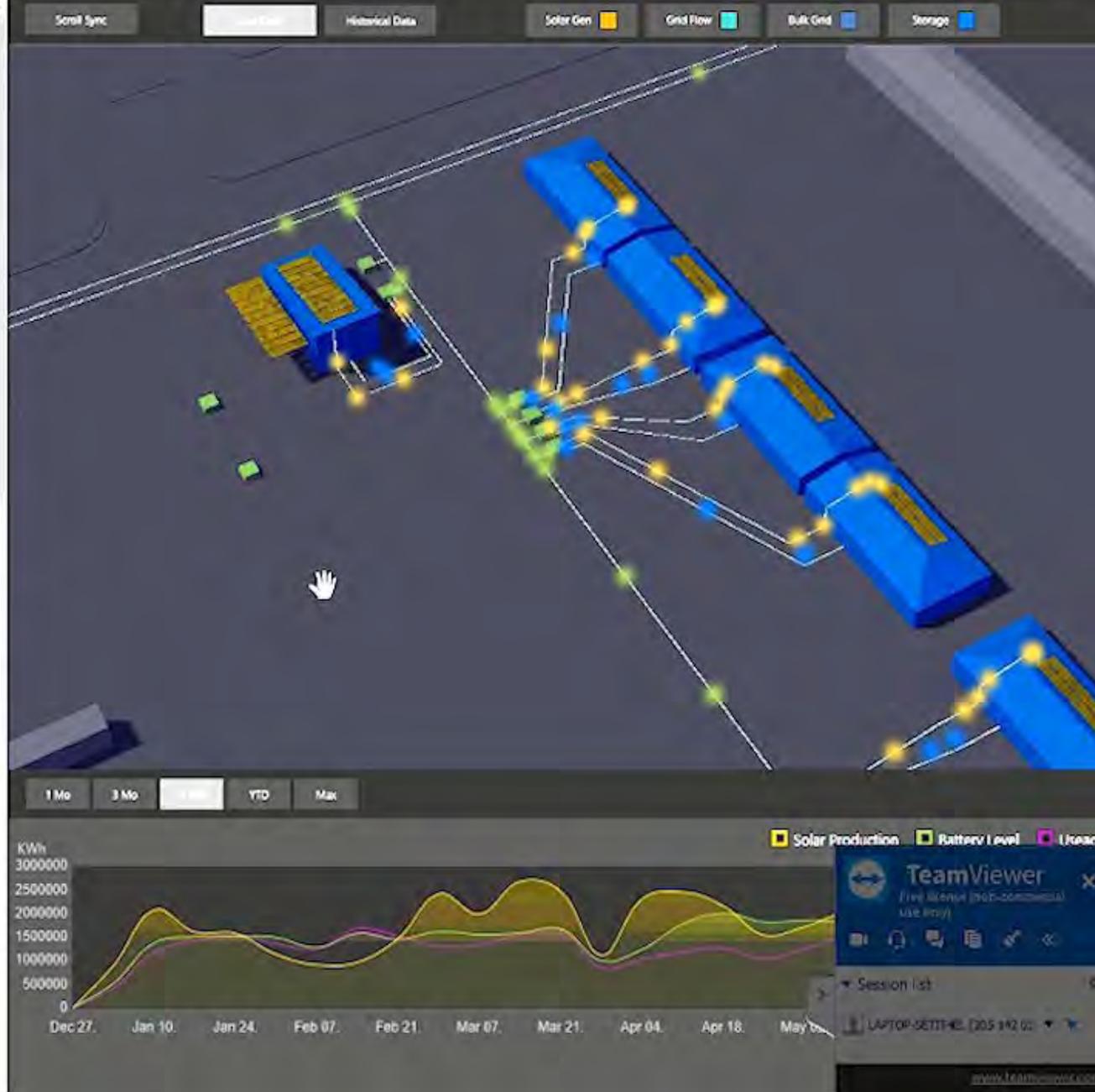
**Unit 159**  
Albuquerque, NM  
87106  
Solar Capacity 3.6 kw

**0.00**  
Tons of Co2 Avoided

Home Dashboard



Home Overview



TeamViewer

Free Remote (No-Commercial Use Only)

Session list

LAPTOP-SETT-4E (205 x42 0)

# Main Fire Station



**\$110,600**  
NASA  
(Terrestrial Space Energy)

**Demo**

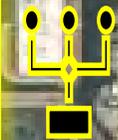
PSEL

DETL

**\$5,000,000**  
NDA 2020  
(Expansion of East Ring)

**\$500,000**  
DOE Solar Energy Office

# Program Expansion: The East Ring



**377<sup>th</sup> Command**

**\$250,000**  
DOE Tech  
Commercialization  
(HyGain)

**SNL (TBD)**

**\$30,000+**  
SNL LDRD

**\$4M+**  
CRADA Expansion



Why we're here today:

ETL is Seeking Opportunities for Partnerships, Collaboration & Information Sharing with Public, Private and Tribal organizations in New Mexico.

1. Partnerships and Collaboration opportunities. Tribes, Local Communities Developers.
2. Regulation and Policy input. State agencies (ETA Council, PRC, MNERD, State Land Office). As a Utility and an Innovation Driven Climate Technology Company we sit at a critical intersection to help inform policy makers of opportunities in the new systems of energy generation & storage deployment and overall resilience development.
3. Investments in Resilience. With potentially game changing Infrastructure opportunities on the horizon, ETL would like to be a partner in deploying resilience and energy assurance across New Mexico.



## Resilient Energy Distribution Network for Critical Infrastructure

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