Breakthrough Energy Ventures

Examples of Electric Power Sector Focused Companies

June 2023

Breakthrough Energy Ventures

A part of the Breakthrough Energy platform, Breakthrough Energy Ventures (BEV) is a purpose-built investment firm seeking to invest in, launch, and scale global companies that will eliminate greenhouse gas emissions throughout the economy. BEV is committed to supporting entrepreneurs and their breakthrough companies by bringing to bear a unique combination of technical, operational, market, and policy expertise.

BEV evaluates companies for investment based on their ability to:

- Create technologies that have been deemed scientifically feasible with the potential to reduce greenhouse gases, at scale, by at least a half a gigaton every year
- Attract other investors
- Fill critical gaps in climate tech that are often neglected

BEV categorizes companies based on five grand challenges: Agriculture, Buildings, Electricity, Manufacturing, and Transportation. This guide offers a sampling of 12 of the 110 BEV portfolio companies that are relevant to the electric power sector, detailing their innovations and unique approaches to reducing emissions. If you are interested in learning more, please visit the **BEV website** or the individual company websites linked in this guide.

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ANTORA

Electrifying heavy industry with zero-carbon heat and power

GRAND CHALLENGE

Electricity

LOCATION

Sunnyvale, CA

LEADERSHIP

Andrew Ponec
Co-founder & CEO

Justin Briggs
Co-founder & COO

David Bierman
Co-founder & CPO

WEBSITE

antoraenergy.com

Antora Energy is electrifying heavy industry with thermal energy storage for zero-carbon heat and power to make it possible and profitable to fully rely on renewable energy for industrial processes. Antora's thermal energy storage soaks up excess solar and wind electricity and uses it to heat blocks of carbon. This thermal energy is then delivered to customers as electricity or industrial process heat, up to 1500°C, on demand.

Smart, ultra-efficient sustainable air conditioning with integral energy storage

GRAND CHALLENGE

Buildings

LOCATION

Parkland, FL

LEADERSHIP

Daniel Betts
Co-founder & CEO

WEBSITE

bluefrontierac.com

Blue Frontier is revolutionizing air conditioning for commercial buildings. The company is the developer of patented solutions for hyper-efficient comfort space conditioning, low-cost energy storage, and smart IoT controls to aggregate its air conditioners as distributed energy resources for use as a Utility-Managed Virtual Power Plant. Blue Frontier's first product addresses the 5 through 10-ton commercial packaged rooftop air conditioner market with a drop-in replacement offered under an HVAC-as-a-Service subscription-based business model.

Delivering cost-effective clean energy through innovative geothermal technology

GRAND CHALLENGE

Electricity

LOCATION

Houston, TX

LEADERSHIP

Tim Latimer
Co-founder & CEO

WEBSITE

fervoenergy.com

Fervo Energy provides 24/7 carbon-free energy through development of next-generation geothermal power. Fervo's mission is to leverage innovation in geoscience to accelerate the world's transition to sustainable energy. Geothermal has a major role to play in the future electric grid and Fervo's key innovations bring a full suite of modern technology to make geothermal cost competitive. Fervo's innovations include technologies such as advanced computational models, horizontal drilling, and distributed fiber optic sensing that have been developed with partners including Schlumberger, ARPA-E, and the Lawrence Berkeley National Lab. Fervo has an industry leading development pipeline of projects with multiple partners including Google and East Bay Community Energy.

Developing long duration energy storage systems to enable a fully renewable, affordable and reliable electric system

GRAND CHALLENGE

Electricity

LOCATION

Somerville, MA

LEADERSHIP

Mateo Jaramillo
Co-founder & CEO

WEBSITE

formenergy.com

Form Energy was founded by energy storage veterans who came together in 2017 with a unified mission to reshape the global electric system by creating a new class of low-cost multi-day energy storage systems that will enable a reliable and fully-renewable electric grid year-round. Form Energy's first commercial product is a rechargeable iron-air battery capable of storing electricity for 100 hours at system costs competitive with legacy power plants.

Quidnet

Powering the carbon-free electric grid with long duration Geomechanical Pumped Storage

GRAND CHALLENGE

Electricity

LOCATION

Houston, TX

LEADERSHIP

Joe Zhou
CEO

Jason Craig
COO

WEBSITE

quidnetenergy.com

Quidnet operates at the nexus of energy and water to enable predictable delivery of power from intermittent sources and large-scale deployment of renewable energy. Its breakthrough energy technology uses existing natural resources to store renewable energy over long durations and in large quantities. This drives down large-scale electric grid storage costs to half that of traditional pumped hydro storage and enables widescale deployment of renewable energy across the power grid.

Mission critical data for decarbonizing power grids

GRAND CHALLENGE

Electricity

LOCATION

London, UK

LEADERSHIP

Marc Borrett
Co-founder & CEO

WEBSITE

reactive-technologies.com

Reactive Technologies is a grid resilience technology company helping grid operators, electric utilities, and regulators transition to net zero and ensure resilient renewables-based power grids. Reactive's products, including the first-of-its-kind Grid-Sonar™ technology, bring unprecedented transparency to grid operations by replacing guesswork and modeling with real-time measurements of grid inertia and other functions. Reactive has worked with some of the most advanced electric utilities in the world and consistently delivers accurate grid data that informs better planning, full utilization of electricity supplies, and cost savings while enabling an accelerated transition to clean energy.

RedoxBlox has pioneered highly scalable and low-cost thermochemical energy storage technology that delivers high grade heat with an energy density of 2400 MJ/m3

GRAND CHALLENGE

Electricity

LOCATION

East Lansing, MI

LEADERSHIP

Dane A. Boysen
CEO

WEBSITE

redoxblox.com

Successful deployment of RedoxBlox storage technolog presents an opportunity for a zero-carbon, direct drop-in replacement for natural gas for industrial heat applications as well as low cost long duration grid scale storage. Without carbon pricing, the RedoxBlox system provides zero-carbon high grade heat at a lower cost than natural gas when gas prices are above $8/mcf for heat applications. Additional economic benefits are available from the recent Inflation Reduction Act tax credits.

RedoxBlox closed a Series A funding round of $20 million in August 2022, led by Khosla Ventures and supported by BEV. The company has also been awarded an additional $7 million in grants from ARPA-E. The team consists of a world-classgroup of 17 full and part-time PhD scientists, entrepreneurs, engineers, and project developers.

Unlocking profitable industrial decarbonization via low-cost, zero-carbon heat

GRAND CHALLENGE

Manufacturing

LOCATION

Oakland, CA

LEADERSHIP

John O'Donnell
CEO

WEBSITE

rondo.com

Energy-intensive industrial processes power the world's economies. But the high temperature heat they require is the world's largest source of CO_2 emissions. Rondo Energy has a new, surprisingly simple solution to the critical need for low cost, zero-carbon heat. Intermittent wind and solar power charge the Rondo Heat Battery, which supplies continuous heat to industrial processes making food, fuels, water, metals, chemicals, and cement. The Rondo Heat Battery leverages the plunging costs of wind and solar power to deliver deep emissions reductions and big cost savings — simply, safely, and without process changes.

Pioneering high-efficiency conductors for electricity grids

GRAND CHALLENGE

Electricity

LOCATION

Huntington Beach, CA

LEADERSHIP

Jason Huang
Co-founder & CEO

WEBSITE

tsconductor.com

TS Conductor products allow transmission & distribution grid operators to be active participants to the energy transition — by reducing line losses and accelerating the integration of wind, solar and battery storage — while leveraging existing infrastructure assets. Its products can be used to substitute ACSR conductors using the same tools and installation procedures. TS Conductor is a Minority Business Enterprise (MBE), and a public benefit company focused on sustainable development and GHG reduction.

Stellarator technology to transform energy markets with fusion power

GRAND CHALLENGE

Electricity

LOCATION

Madison, WI

LEADERSHIP

Christofer Mowry
CEO

WEBSITE

typeoneenergy.com

Type One Energy Group is mission-driven to provide sustainable, affordable fusion power to the world. The company was formed in 2019 by a team of globally-recognized fusion scientists with a strong track record of building state-of-art stellarator fusion machines, together with veteran business leaders experienced in successfully scaling companies and commercializing energy technologies. Type One Energy applies proven advanced manufacturing methods, modern computational physics and high-field superconducting magnets to develop its optimized stellarator fusion energy system. Its FusionDirect development program pursues the lowest-risk, shortest-schedule path to a fusion power plant over the coming decade, using a partner-intensive and capital-efficient strategy.

Developing a new approach to using High Temperature Superconductors (HTS) for electricity transmission

GRAND CHALLENGE

Electricity

LOCATION

Boston, MA

LEADERSHIP

Tim Heidel
CEO

WEBSITE

veir.com

VEIR is developing a new approach to using High Temperature Superconductors (HTS) for electricity transmission. HTS has long held the promise of using smaller transmission lines and better utilization of existing rights-of-way, but has been hampered by higher costs, distance limitations and overall system complexity. VEIR's novel approach to HTS solves those problems by simplifying the system design that connects green energy sources to the transmission grid to address the ever-growing demand for electricity and overcoming constraints currently holding back renewables penetration. The team is commercializing an approach based on HTS tape and a novel cooling system for high-voltage superconducting transmission lines.

WeaveGrid

Intelligently connecting electric vehicles to the electric grid

GRAND CHALLENGE

Transportation

LOCATION

San Francisco, CA

LEADERSHIP

Apoorv Bhargava
Co-founder & CEO

WEBSITE

weavegrid.com

WeaveGrid helps utilities minimize EV integration costs by transforming EVs into flexible grid assets that support resilience and sustainable solutions. The WeaveGrid platform balances EV charging profiles, grid system needs, customer rates, and driver preferences to deliver an end-to-end service for utilities and its customers. WeaveGrid's data-driven platform helps utilities find EV drivers, enroll them in programs and EV-specific rates, analyze and get insights on charging patterns, incentivize grid-friendly charging habits, and actively manage charge, all while keeping drivers and the grid happy. WeaveGrid has recently implemented EV programs for BGE, Xcel Energy, Pacific Gas & Electric, Portland General Electric, and Pepco and Delmarva Power.

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