

NEW ENERGY NEXUS

UNITED STATES

IMPACT REPORT 2020

About New Energy Nexus

VISION

An abundant world with 100% clean energy for 100% of the population, in the shortest time possible.

PROBLEM

There are not enough diverse and thriving clean energy entrepreneurs to match the scale of the clean energy transition in United States.

MISSION

New Energy Nexus aims to support diverse entrepreneurs to drive innovation and build equity into the global clean energy economy



New Energy Nexus

previously known as California Clean Energy Fund (CalCEF) has been accelerating investment into clean energy and building the California clean energy innovation ecosystem since 2004. In 2019, we expanded our US presence with The Clean Fight New York, a NYSERDA funded program, and also launched the Third Derivative, a joint venture with the Rocky Mountain Institute. Along with our existing robust California based programs and our global corporate innovation programs these efforts further advance our vision of a diverse and vibrant ecosystem that connects all who work towards creating and commercializing entrepreneurial solutions that power the transition to a clean energy economy for all.

This transition requires entrepreneurial ingenuity in many different contexts connected by overlapping networks and will need:

- Breakthrough technologies.
- New distribution and financing models.
- Enterprises that serve all energy customers, not just a select few.
- The clean energy sector and ecosystem stakeholders are strategically accountable to achieving and intentionally creating high quality and good compensation workforce opportunities, that are available to all.



US Program

The Clean Fight

in New York has focused its first cohort on clean buildings, a key challenge for decarbonizing the state. Nine growth stage companies were selected to receive tailored acceleration services, including hands on matchmaking with corporate real estate partners and industry leading investors. The cohort companies can also apply for up to \$500k each in catalytic grant capital to fund their growth.

**The Clean Fight is supported by NYSERDA (New York State Energy Research and Development Agency)*

CalSEED

Supports break-through technologies for California in the Concept and Prototype stage (Technical Readiness Level 2-4) with non-dilutive funding up to US\$600,000, business acceleration services and our targeted network opportunity, including our semi-annual Connex events to enable connections to investors, demonstration partners and deployment opportunities. In 2020, 28 companies were selected for an award, for a combined 97 start-ups receiving US \$20million in CalSEEDs awards since program inception in 2017. To date, nearly \$9M have been awarded to entrepreneurs from underrepresented groups.

CalTestBed

supports break-through technologies for California post-prototype stage (TRL 5-7) with testing vouchers for product testing at more than 60 laboratories across the University of California and Lawrence Berkeley National Lab. A curated annual symposium connects entrepreneurs with commercialization partners. 27 CalTestBed testing vouchers were awarded in 2020 with a cumulative value of US \$5.5 million.

**CalSEED and CalTestBed are made possible by the California Energy Commission and funded through the Electric Program Investment Charge (EPIC)*

Small Grants Programs

In 2020, our Rapid Response Grants bridged economic loss due to COVID-19 for two clean energy enterprises to continue serving their customer base, many from disadvantaged communities, and retaining X jobs in small businesses. In 2019, we had a cohort of three Explorers in Residence (XIR) from disadvantaged communities who advanced their clean energy concepts to serve customers in their communities. In 2017 and 2018 we held the California Cup with our partner Los Angeles Cleantech Incubator.

Equity-centric values are core to our US programs and reflect New Energy Nexus' commitment to supporting diverse entrepreneurs while creating and fostering a pipeline of opportunities with numerous entry and connection points for clean energy companies and ecosystem stakeholders. US programs include:

CalCharge

is a unique public-private-partnership that provides energy storage companies, including startups, streamlined access to world class laboratory facilities and their staff at the three National Labs in the Bay Area. Affordable CalCharge membership and a conversation with our energy storage experts are the first easy steps to enable speedy access to these lab facilities. Three California energy storage start-ups are currently working at the Labs.

The Clean Energy Business Roundtable (CEBR)

is an event series - in 2020 we did it all virtually! - to convene California business leaders, regulators and legislators for important conversations about the opportunities and challenges for California's energy transition. With us convening the conversation, these stakeholder groups can exchange ideas and resolve roadblocks to make rapid progress on initiatives towards decarbonizing California sooner than ASAP. Our 2020 report Building Lithium Valley: Opportunities and Challenges Ahead for Developing California's Battery Manufacturing Ecosystem grew out of these conversations.

New York State Energy Research & Development Authority (NYSERDA)

is a state public-benefit corporation whose mission is to advance clean energy innovation and investments to combat climate change, improving the health, resiliency, and prosperity of New Yorkers and delivering benefits equitably to all.

The California Energy Commission

is leading the state to a 100 percent clean energy future. Among other activities, it administers funds from the Electric Program Investment Charge (EPIC) program. Via EPIC, approximately \$120 million is invested annually for innovative clean energy technologies and approaches benefiting the ratepayers of California's three largest electric investor-owned utilities.

USA Ecosystem map



NEW YORK

THE CLEAN FIGHT
NEW YORK

SMALL GRANT CHALLENGES

CalSEED

CalTestBed



CalCharge

CEBR

EV AND BATTERY CHALLENGE

THIRD DERIVATIVE³

CALIFORNIA

*We are stronger together.
Stronger because we provide a network of programs
accelerating clean energy entrepreneurs at all stages of their growth*

Meet a Clean Energy Innovator: Phase Change Energy Solutions (PCS)

Mission:

To pioneer simple yet smart materials that **reduce the heating and cooling** needs of the built environment and provide **temperature resiliency**, to help create a **sustainable future** for all.

Thermal storage is a critical but often overlooked step toward carbon neutral buildings. Phase Change's unique heat storage materials (BioPCM®) can be set to virtually any desired temperature, absorbing heat when temperatures exceed it and releasing heat when they drop below, radically reducing the energy needed to maintain a desired temperature within buildings. 1-inch of BioPCM® is the thermal equivalent of a 24-inch thick block of concrete! Easy to install and cost effective, Phase Change's solutions enable low and middle income buildings to save money on energy usage, extend the life of HVAC equipment and improve tenant satisfaction with consistent, comfortable temperatures.

Though The Clean Fight New York Program, PCS received support in

- **Deals with Corporate Buyers:** Facilitated meetings with key decision makers at ten of the largest customers in New York real estate, with which PCS had no pre-existing relationship; aided development of pilot and demonstration projects
- **Relationships with Investors:** Facilitated conversations with key investors regarding the final allocations of the company's most recent funding round
- **Strategic Advisory Support:** Tailored assistance with developing a scalable manufacturing strategy, a key hurdle in continuing to grow the business
- **Expanded Network of Business Leaders:** Facilitated private discussions with the chief executives of fellow cohort companies
- **Industry Insights:** Curated interactive sessions with thought leaders on how to successfully scale in NY, such as workforce development, financing models, and the state of the NY regulatory market

So Far PCS has:



15,000,000 sq. ft.

BioPCM® products installed in over 10,000 buildings and structures



36,000 tCO₂

emissions avoided

1,627 Million tCO₂

emissions/2089B kWh — annual energy savings by 2030 if BioPCM® installed in all single-family homes and small commercial office buildings in the US



46,000,000 kW

electricity consumption avoided



“

Participating in The Clean Fight NY has been a significant boost to our scaling efforts - thanks to the strategic connections to Utilities, Corporates and the investment community. We are excited to partner with New Energy Nexus in the journey to decarbonize the built environment.”

*CEO Phase Change Energy Solutions
- Govi Rao*

Meet a Clean Energy Innovator: EVMatch

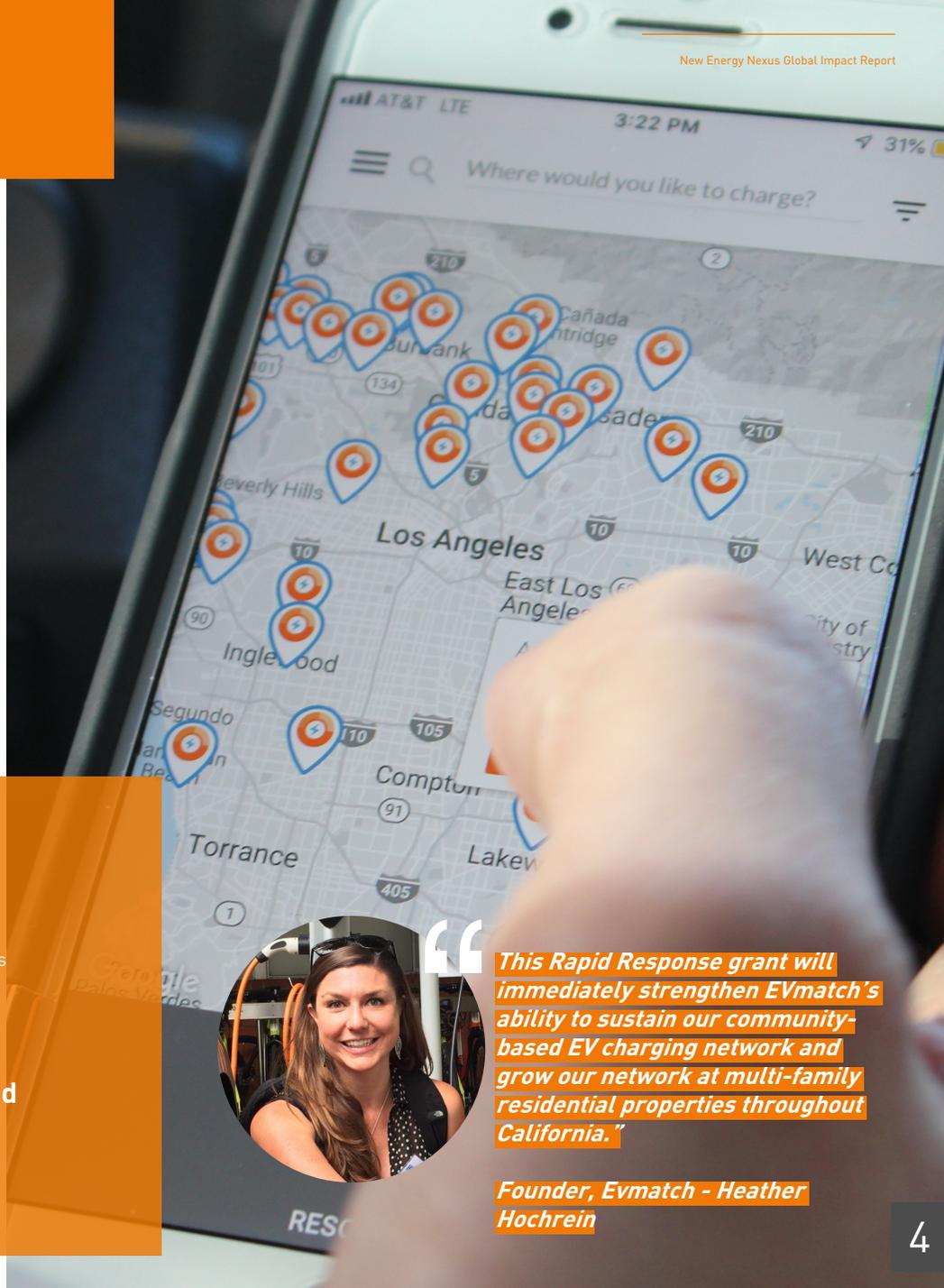
Mission:

EVMatch is on a mission to **accelerate EV adoption** by making charging easy, reliable, and accessible to all.

EVMatch is a peer-to-peer network for electric vehicle (EV) charging that harnesses the power of sharing to immediately create more reliable charging options. Through EVMatch, individuals, business owners, and property managers rent out private charging stations, earning money and supporting more EVs on the road. EVMatch's network immediately provides improved charging access and will later be leveraged to provide grid services, including demand response and energy storage.

Support from New Energy Nexus' Rapid Response program, CA Climate Cup and Accelerate Energy Series:

During the Rapid Response program, EVMatch installed two new charging stations at Municipal Utility District (MUD) properties in California. In late 2020, the \$15,000 of non-dilutive funding from Rapid Response grant was used for outreach at a critical time. This resulted in \$375,000 of project applications for EV charging deployment, \$89,000 of which was already approved by March 2021.



Since receiving support from Rapid Response:



3.5 FTE

Jobs Retained



86% installed

in Disadvantaged Communities

2 PTE

Jobs Created



688 people served



8 commercial

EV charging points



This Rapid Response grant will immediately strengthen EVMatch's ability to sustain our community-based EV charging network and grow our network at multi-family residential properties throughout California."

Founder, Evmatch - Heather Hochrein

Meet a Clean Energy Innovator: Coreshell

Mission:

Coreshell Technologies is solving a fundamental issue in all rechargeable batteries: **electrode surface instability**.

Coreshell is solving the key degradation issue in rechargeable batteries with their nanolayer electrode coating technology. The goal of Coreshell technology is to reduce the battery's cost and increase battery's energy density to make the next generation of electric vehicles commercially competitive with traditional internal combustion engines. This would allow a major tipping point in the sale of EVs globally.

Support from New Energy Nexus' CalSEED Concept, CalTestBed and EV Battery Challenge:

Since receiving CalSEED funding Coreshell has researched the market and performed calculations on how their improvement in battery cost could influence ratepayer costs as well as metrics of reliability, job creation, and others. Coreshell is also a CalTestBed recipient and will begin their lab testing work soon. Through EV & Battery Challenge, Coreshell has been able to complete a Proof of Concept project with LG Energy Solution, a world-leading lithium ion battery manufacturer. This collaboration enables Coreshell to demonstrate the benefits of their technologies and get verified by a top industry leader. It will increase their technology readiness level and get their ready to demonstrate the role to role process.



Their unique thin-film electrode coating process enables greater capacity, safer operation & up to 50+% lower cost/kWh batteries for the next generation of electric vehicles & energy storage.



“

New Energy Nexus has been instrumental in helping Coreshell build its company through numerous grant opportunities, corporate connections, and general startup mentorship. We're very fortunate to be a part of the New Energy Nexus community!”

CEO & Co-Founder Coreshell Technologies, Inc. - Jonathan Tan

Meet a Clean Energy Innovator: Feasible

Mission:

Feasible is accelerating the massive shift to electrified mobility by commercializing a technology that will have a significant, near-term impact on the cost of batteries

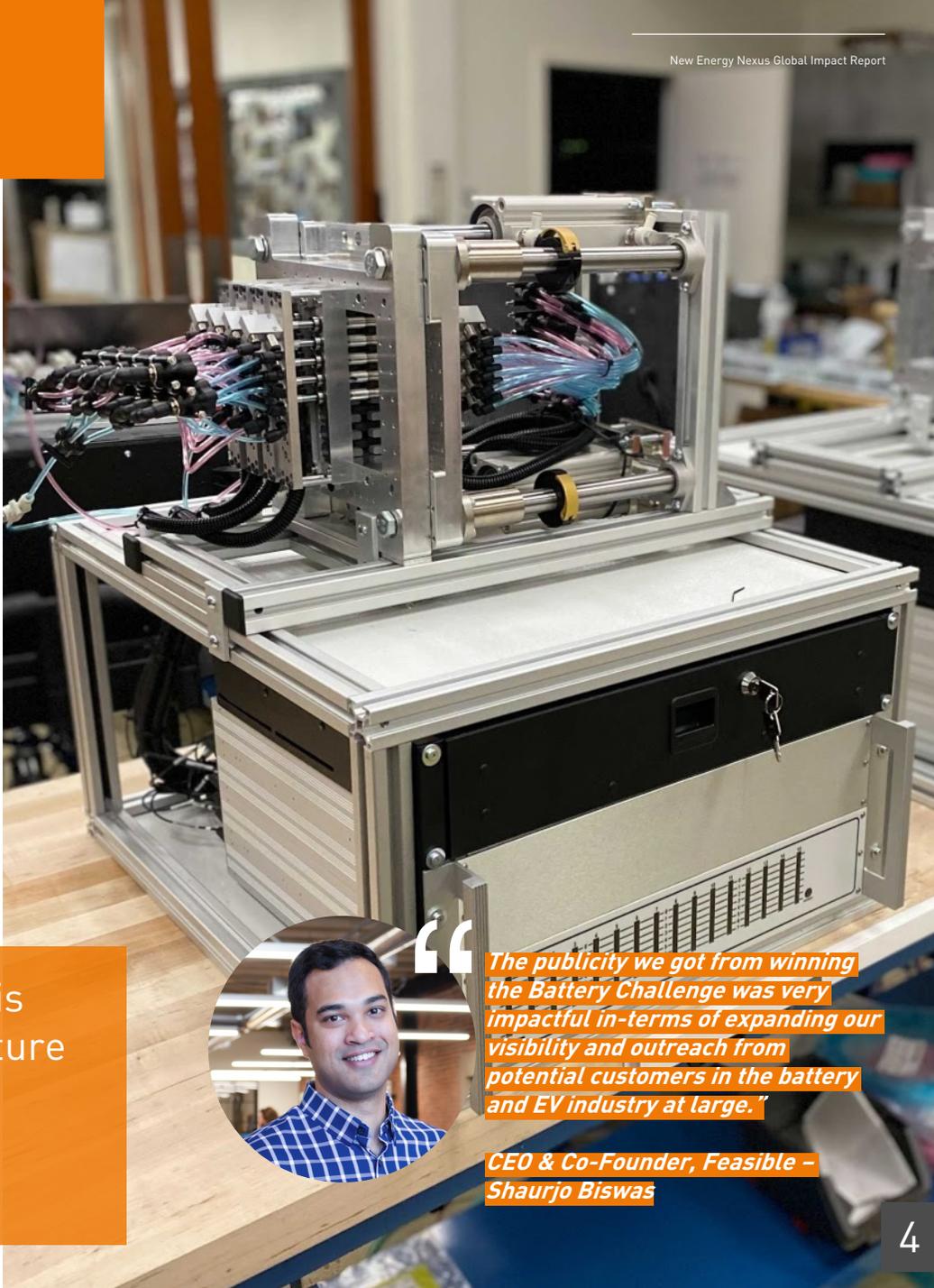
Feasible, a pioneer in advanced battery diagnostics using ultrasound and machine learning. Feasible's EchoStat Ultrasonic Battery Inspection Platform consists of (1) Production-Grade Hardware that integrates into any battery production line (2) Electronics and Sensors for quickly collecting rich ultrasound data on any type of battery, and (3) Software Analytics that deliver valuable insights based on data streams from across the production process.

Though New Energy Nexus' LG Chem Battery Challenge and CalTestBed:

- Participated in the Bay Area Battery Summit (BABS) organized by the New Energy Nexus in 2017, 2018, and 2019, gaining access to "hard to reach" potential target customer companies and commercialization partners.
- Finalist and first place winner of the LG Chem Battery Challenge 2019, resulting in exposure to one of the leading Battery Manufacturers in the world and an extended technology evaluation project with LG Chem.
- Voucher recipient of the CalTestBed 2020 program, enabling work with a testing partner at UC Davis to evaluate battery cells beyond their in-house capability, and helped with developing their commercialization path.

Feasible Progress and Achievement

As a result of the learning from the Battery Challenge with LG Chem, Feasible focused their efforts on exploring detectability of defect features in cells. The findings received a lot of interest from additional cell manufacturing companies.



Reducing the cost of batteries is crucial for our clean energy future and an opportunity to create billions of dollars per year in economic value



“The publicity we got from winning the Battery Challenge was very impactful in-terms of expanding our visibility and outreach from potential customers in the battery and EV industry at large.”

CEO & Co-Founder, Feasible –
Shaurjo Biswas

Meet a Clean Energy Innovator: Stasis Group, Inc

Mission:

Stasis Energy Group is bringing thermal energy storage solutions to commercial HVAC systems.

Stasis develops bio-based thermal energy storage systems (TESS) that retrofit existing roof-top-mounted packaged HVAC systems to replace air conditioning with TESS-cooling during the highest peak demand periods of 4-6 p.m. for small and medium commercial buildings.

Support from New Energy Nexus' CalSEED Concept Award and CalTestBed:

Stasis Group has completed the CalSEED Concept Award project and all phases defined in Scope of Work, including initial theoretical analysis, market and sustainability impact, development of small-scale test plan, prosecution of test plan and data acquisition and reaching a proof of concept. Stasis was chosen as a CalSEED prototype awardee and is a CalTestBed recipient as well.

Startup Progress and Achievements

- Progressed from technology readiness level 2 to 6.
- Employed 1 full time and 5 part time people.
- Received 2 patents
- Built 1 pilot for testing and research and development, with 2 more pilot sites awaiting prototype



The system reduces cooling related peak demand charges by up to 50% and pays for itself in 5-6 years, providing savings for the life of the unit.



New Energy Nexus provided the opportunity to develop new product applications, from proof-of-concept to field validation pilots, which body of work helped to secure private equity partnership and investment, without which our company may have quite easily foundered and failed due to lack of resources and opportunities."

President, Stasis Energy Group – Rob Morton



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