

# The Efficient Frontier

Leading  
Private Companies

INDUSTRIAL & ENERGY  
TECHNOLOGY



2024







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# Introducing The Efficient Frontier

The leading private companies in  
industrial and energy technology

Last year, in the inaugural version of the Guggenheim Efficient Frontier report, we wrote that meeting the challenge posed by climate change and environmental degradation has created one of the biggest opportunities in the history of capitalism. The passage of another year has done nothing to reduce our level of conviction, as climate-driven events have impacted everything from residential insurance markets in the US to air conditioning demand in India. There are challenges, to be sure - the historically high levels of venture investment that we saw in 2021 and 2022 have cooled somewhat. China's export-led growth offensive has put considerable deflationary pressure on the solar, energy storage and electric vehicle sectors, among others. Meanwhile, public equity markets have seen another disappointing year insofar as climate and environmentally focused companies are concerned. Even so, competitors in the right markets continue to be able to raise money and advance their businesses. We have identified 57 of those best-in-class companies in this year's edition of the Guggenheim Efficient Frontier.

Looking at the level of private investments focused on industrial and energy technology, we see a somewhat sobering picture relative to last year. Following two years of very strong growth in 2021 and 2022, venture and strategic investments declined by 10% in 2023 according to data gathered by the Cleantech Group. Still, we note that the \$121 billion in reported investments was the second-highest ever, and still represents a nearly threefold increase from 2020's \$44 billion outcome. The composition of 2023's investments by sector did not change much from 2022, with energy and power investments comprising 45% of the total and transportation-related investments accounting for another 19%. 2023 did however see an uptick in investments related to waste management and recycling, and a decline in agriculture and food-focused investments. Looking at year-to-date numbers for 2024, the most notable development has been an increase in materials-related investments, while transportation-focused investments have fallen off. Based on what we see to date, 2024 looks to be another \$100 billion-plus year overall, although perhaps down on the 2023 outcome.

A year ago, public and private markets were still digesting the impact of the Bipartisan Infrastructure Law and the Inflation Reduction Act. Since then, we've watched the US Treasury and the private sector work to interpret and implement the legislation, with substantial results in terms of energy infrastructure and manufacturing investments. A total of \$114 billion in decarbonization-focused manufacturing investments have been announced since the IRA's passage, including federal loans, according to data gathered by Bloomberg

Venture and strategic investments declined in 2023, but were still the second-highest ever.

Putting public policy to work has been the main focus for the past year.

New Energy Finance. The majority of those announcements have come during the last twelve months. We note that the Department of Energy's Loan Programs Office has been particularly active, with new conditional commitments totaling \$14 billion during its FY2023. We haven't necessarily seen anything new this past year, but we've seen significant progress in putting new funding to work. We expect more of the same in 2024.

Despite the robust investment activity taking place, public equity prices for decarbonization and efficiency-focused stocks have continued to disappoint. Since the beginning of May 2023, when the previous version of the Efficient Frontier was published, the iShares Global Clean Energy ETF has declined by 25%. During the same time period, the S&P500 saw a gain of 23%. We note that the underperformance of the past twelve months comes on the heels of a disappointing 2022 as well. With the excesses of the SPAC wave now well behind us, we would have expected equity markets to assign better valuations to the numerous profitable and competitive companies that we cover. This has not been the case. Part of the challenge, we believe, still relates to uncertainty regarding the trajectory of future policy, especially as we prepare for the November 2024 election cycle. We also believe that public markets are spooked by China's export-led economic growth strategy, which is particularly evident in markets like solar power equipment, energy storage and electric vehicles. Even so, we think these are challenges that the market can overcome, especially if a new group of high-quality climate-focused companies becomes available to public market investors.


The private companies in this year's Guggenheim Efficient Frontier reflect everything that we've learned during the past year. The 57 companies we have selected this year span seven categories, specifically the carbon economy, energy production, energy storage, fuels, materials, technology platforms and transportation. Our approach continues to focus on identifying later-stage companies, and although not all of this year's Efficient Frontier lineup is yet reporting revenue, 40 of the 57 have raised at least \$100 million over multiple investment rounds. Technology platform companies continue to make up the largest portion of the group, at 16 of the total, and this year we note a sharp increase in the number of materials-focused companies, which comprise 12 of the total. We continue to see opportunities in new energy storage technologies and the carbon economy as well. Things have gotten tougher in transportation and mobility, however, which is also reflected in the relatively minimal three companies we have selected this year. It is notable that this year's Efficient Frontier includes no wind technology competitors, and only two in solar, specifically **Terabase** and **Lunar Energy**.

Yet another year of disappointing performance from public equity markets.

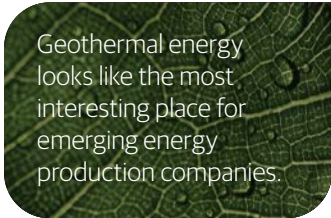
Technology platform and materials companies dominate this year's Efficient Frontier.

We continue to believe that capturing, trading and sequestering carbon are going to be important components of the effort to address climate change, even if the economics may appear challenging. The credits made available under the IRA bring carbon capture much closer to viability, and we see substantial private-sector involvement as well, including interest from fossil fuel companies who regard carbon markets as an inevitable part of their futures. We note that one of the companies we profiled last year, **Carbon Engineering**, has since been purchased by Occidental Petroleum. We feature several other carbon capture businesses again this year, including direct-air capture specialists **Heirloom** and **Climeworks**. **Carbon Clean**, **Carbon America** and **Svante** are also carbon capture businesses, focusing more on industrial and point-source solutions. **C-Zero**, for its part, aims to extract carbon from methane prior to combustion, leaving customers with a stream of hydrogen plus carbon in solid form for sequestration. This year's list also includes a new addition, **Project Canary**, which is working with project owners to detect and monitor fugitive greenhouse gas emissions. **Xpansiv**'s carbon-focused trading platform and **Persefoni**'s carbon footprint measurement and reporting solution both make the list again this year. The 9 companies in our carbon economy category have raised a total of \$2.66 billion in funding to date.

Producing zero-carbon energy may be important, but it is not an area where investing in early-stage companies has been easy. The solar and wind supply chains have already scaled and feature brutal price competition increasingly driven by state-sponsored actors – hardly a welcoming environment for new companies. We still see opportunities, though, with companies that address the many additional challenges that exist in zero-carbon power generation. Last year, our energy production category included 7 companies – this year we're down to 4, with several companies dropping out and no new additions. Repeating are three geothermal technology companies, specifically **Quaise**, **Fervo** and **Eavor**. Quaise's millimeter-wave drilling technology addresses the need for deep geothermal well bores, while Fervo and Eavor both offer advanced solutions that improve geothermal heat recovery and efficiency. In general, we continue to believe that advancing geothermal power is one of the most attractive opportunities in energy technology. **Lunar Energy** is one of the few private companies focused on solar power equipment that still looks interesting in our view, focused on deploying its solution in distributed solar generation. The 4 companies in this year's energy production category have raised \$1.31 billion in funding so far.




Carbon capture, trading and accounting businesses continue to offer potential.



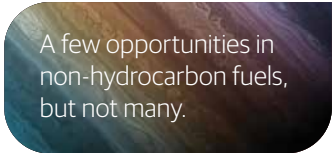
Geothermal energy looks like the most interesting place for emerging energy production companies.

Energy storage still lies at the center of decarbonization efforts, as it has for years. We see advances on several fronts, as some companies work to scale in the dominant lithium-ion segment of the business, while others look to develop alternative solutions that offer longer duration or that address other specific needs. Last year, we identified 9 companies in our energy storage category, and this year the number goes up to 10. We've added two companies this year that are focused on storing energy for use as industrial heat, which we believe is an underappreciated segment of the market – those companies are **Antora** and **Rondo**. **Flexgen** and **Powin** return as leading integrators of lithium-ion energy storage, as does **Northvolt** as a major competitor in the effort to build lithium-ion cell manufacturing capabilities in the western hemisphere. We have added **KORE Power** this year as another important competitor in cell production, in recognition of that company's plans to build in the US. **ZincFive** is focused on higher-power, short duration opportunities in resilience, especially for the data center market. **EnerVenue**, **Hydrostor** and **Form Energy** fill out the category, with all three companies focused on longer-duration energy storage technologies. The 10 companies in our energy storage category have raised \$16.6 billion since their inception.



Addressing energy storage needs is vital – we add some new companies this year.

We have always sought in our research to stay clear of any biofuels enterprises. Electrons produced with carbon-free technology get cheaper every year, as does energy storage, while hydrogen production has edged closer to viability as a result of subsidies available under the IRA. With all of this in mind, we tend to be skeptical of new hydrocarbon-based fuel solutions. That said, we do see selected opportunities in non-hydrocarbon fuels, even considering the unfavorable stance that the US Treasury has taken with respect to IRA hydrogen production credits. **Amogy** makes our list again this year with its ammonia-based solutions for power production, which are especially well suited to the emissions-intensive shipping industry. **Electric Hydrogen's** advanced electrolyzer technology also makes the cut again this year, with the company supplying solutions that support industrial-scale clean hydrogen production. Finally, we include hydrogen fueling specialist **FirstElement Fuel**, which is building a network of hydrogen fueling stations in California, including the country's largest facility for fueling commercial hydrogen fuel cell vehicles. The 3 companies in this year's fuel category, down from 5 last year, have raised a total of \$1.03 billion since their founding.




A few opportunities in non-hydrocarbon fuels, but not many.

Perhaps the biggest change in our lineup relative to last year comes in the materials technology group, where the number of companies has nearly doubled from 7 last year to 12 this year. The growth makes sense, in our view, given the intense interest that investors and customers have in establishing a battery supply chain that is not dependent on China. The majority of the companies we've selected are focused on lithium production, anode/cathode material production or battery recycling and material recapture. The two that aren't are **Brimstone Energy**, which is working on a much lower-carbon approach to producing Portland cement, and **Koloma**, which is developing a way to extract naturally occurring hydrogen from geological formations. On the battery side, we include **Ascend Elements**, **Cirba Solutions** and **Redwood Materials** on the recycling and materials recovery segment of the business. Lithium producers **Lilac** and **EnergyX** make the cut as well. Additional battery materials competitors, focused mostly on cathode and anode materials, include **Anovion**, **Group14**, **Lyten** and **Sila Nanotechnologies**. Finally, we include **Circularor**, which supplies supply chain traceability solutions for the battery industry, among others. The companies in our materials technology group have raised \$6.76 billion to date.



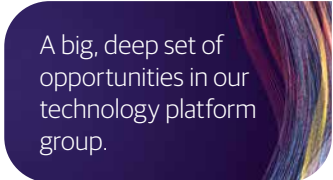
Battery supply chain efforts are driving significant growth in material technology investments.

Transportation continues to be a challenging subsector for us, with the number of cited companies declining this year from 5 to 3. Many passenger and commercial electric vehicle companies either went public via SPAC, went bankrupt or in some cases managed to accomplish both. We see nothing currently that looks investable in the electric vehicle segment. At the same time, the slowdown in adoption rates has put pressure on charging infrastructure companies as well. The result is that we're left with two of the most resilient private charging competitors, **FLO** on the passenger and light commercial vehicle side and **TeraWatt Infrastructure** in heavy commercial vehicle charging. We think that both companies will have what it takes to emerge stronger from the current challenging environment. Once again, we also highlight **Aperia** and its focus on commercial vehicle tire management - we've long believed that focused solutions like Aperia's platform doesn't get enough attention. The 3 companies in this year's transportation list have raised a total of \$1.23 billion.



We have identified a few survivors in the transportation segment.

Last, but definitely not least, comes our selection of technology platform companies. Not surprisingly, this is a varied list of business models, although typically software-heavy and asset-lite. Technology platform firms comprise the biggest portion of the Efficient Frontier list at 16, up from 13 last time, and we note that these are the kinds of business models that typically can attract venture financing. That said, most of the companies on this list are less capital intensive as compared to energy storage or materials technology companies, and the total amount of financing raised by our 16 companies is only \$2.4 billion since inception, not a large number considering the number of companies. There are a few hardware-focused businesses - **Infinitem** has developed new electric motor technology utilizing wide bandgap power semiconductor power electronics, and **SPAN** continues to advance its smart electrical panel technology. **Terabase** has developed a digital and construction automation platform that allows solar power plants to be built more efficiently. **WeaveGrid** works with utilities, EV charging companies and vehicle owners to meet the challenge of effectively integrating charging infrastructure with the power grid. We see several interesting monitoring platforms targeting risk management, with **Pano.AI**'s solution focused on detecting wildfire threats, while **AIDash** helps asset owners monitor risk factors such as vegetation and storm-related risks. **Power Factors** and **Raptor Maps** provide performance-focused monitoring solutions for asset owners as well. This year, we include several customer-facing clean energy service platforms, specifically **Arcadia Power** and **Swell Energy**, as well as **Uplight**, which helps utilities and other energy providers engage with their customers. Two of the most successful transaction and aggregation platforms appear on this year's list, specifically **Leap Energy** and **LevelTen**, and we include two of the best asset financing businesses also in **Redaptive** and **Budderfly**. Rounding out the list is **Omnidian**, which provides performance assurance guarantees and monitoring services for residential solar power systems.



A big, deep set of opportunities in our technology platform group.

There is notable consistency year-to-year when we look at the investors who play a role in financing Efficient Frontier companies. Once again, we see **Breakthrough**, **Prelude** and **Energy Impact Partners (EIP)** as the most prolific investors with 13 companies for Breakthrough and 9 each for Prelude and EIP. **Microsoft** follows with 7 companies, and **Amazon** and **Congruent** are just behind with 6 each. Filling out the list of top investors are **Fifth Wall**, a newer participant with 5 companies, and **SK**, a Korean investor group also with 5 companies. The list lengthens considerably as we drop below 5 companies, with another 7 investors showing up in the Efficient Frontier at 4 companies each. In addition to the relatively stable list of key investors, we note again this year the absence of many better-known venture capital and strategic investors. Putting money to work in energy technology and decarbonization still appears to be a specialized undertaking. We would also point out that the repeated presence of certain investors at the top of our list does not result simply from repeatedly selecting the same companies for the Efficient Frontier. The best investors we speak to have consistently been able to identify, and support, what we believe are the best companies.










Experienced climate-focused investors once again dominate our list.





# The Efficient Frontier - companies by subsector











The leading private companies  
in industrial and energy technology




Source: Guggenheim Securities, LLC | Company Records



	 Heirloom	
		
		






Materials

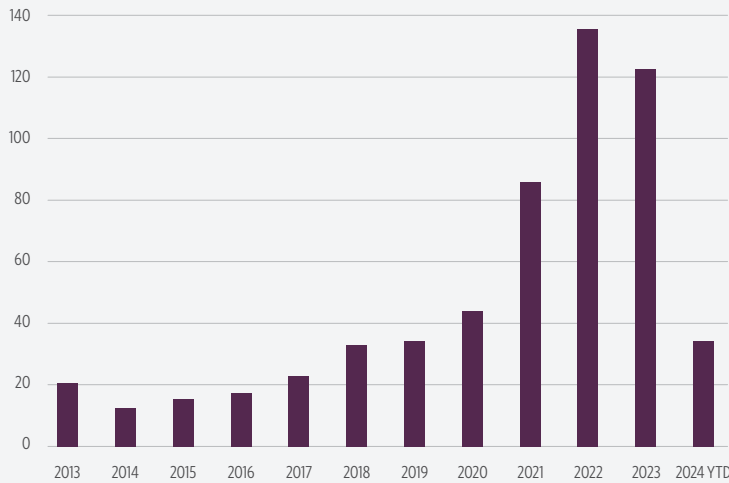


Technology platforms



Transport

FUNDING, \$ BILLION

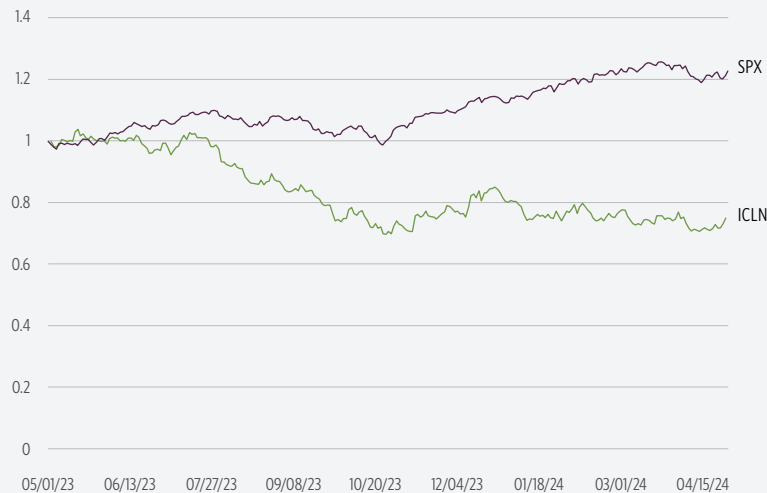


**Total funding for private companies in sustainability**

2023 saw investments decline from 2022's peak, but it was still the second-strongest year in history.

Source: i3Connect

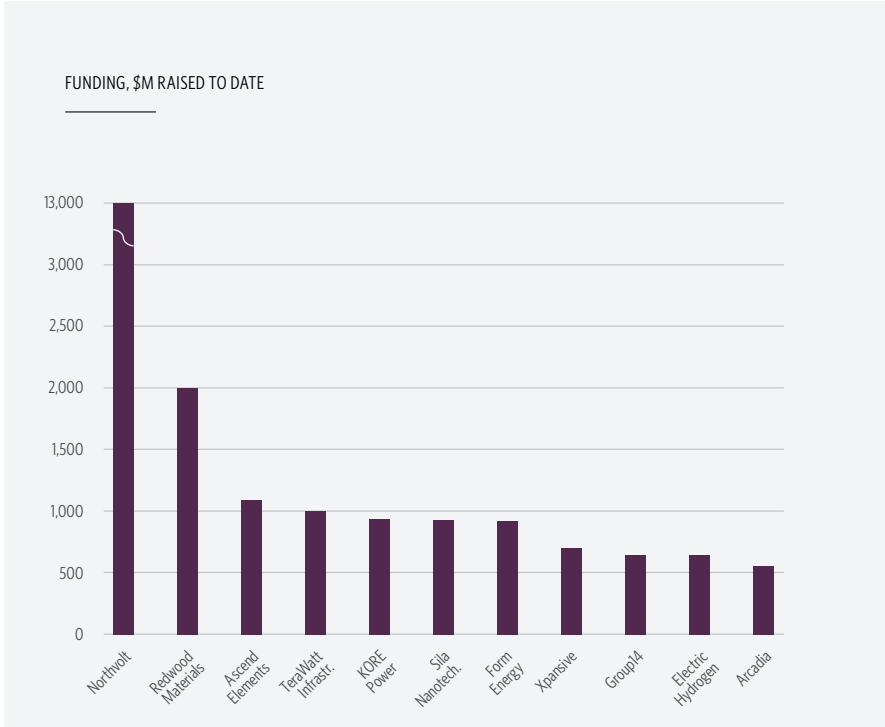
MAY 2023 = 1



**Stock price performance for sustainability-focused companies and the market**

Sustainability-focused equities deliver yet another year of poor performance.

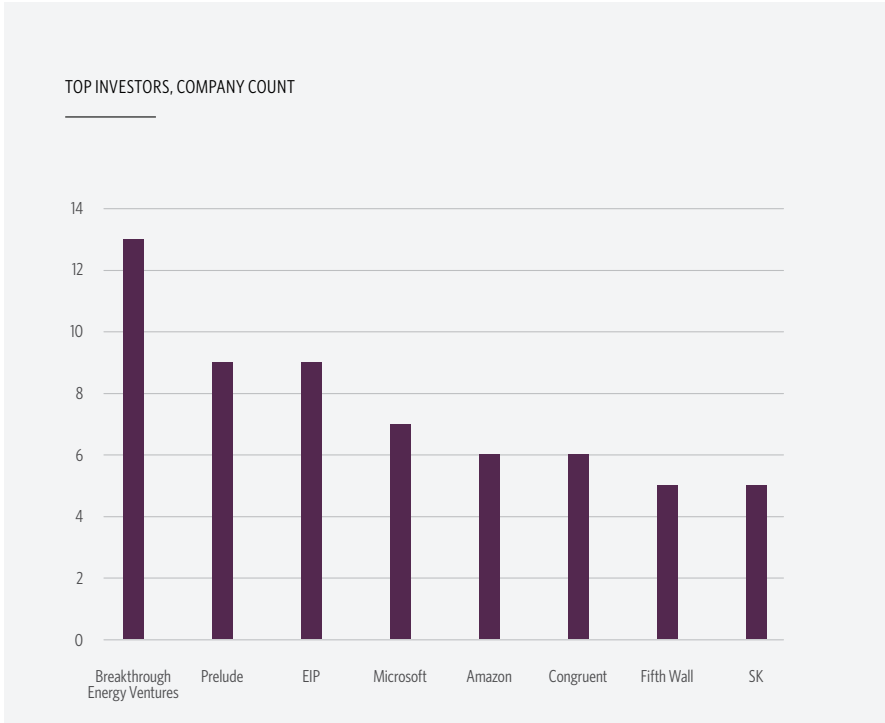
Source: Guggenheim Securities, LLC | FactSet



**Top funding activity to date for companies in The Efficient Frontier**

Energy storage and materials companies dominate the list of biggest money raisers.

Source: Guggenheim Securities, LLC | Company Records



**Investors with the most portfolio companies in The Efficient Frontier**

An experienced group continues to dominate the investing landscape for The Efficient Frontier.

Source: Guggenheim Securities, LLC | Company Records

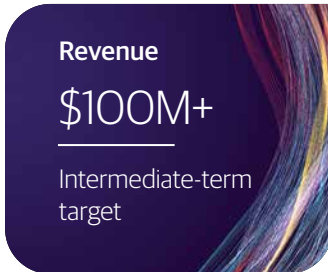
# AiDash



## San Jose | California

founded 2019  
headcount 350

### TECHNOLOGY PLATFORMS



## Management

**Abhishek Vinod Singh** | Co-Founder, Chief Product & Technology Officer

**David Wolpa** | CRO

**Nitin Das** | Co-Founder, Chief AI Officer

**Rahul Saxena** | Co-Founder, CPO, CTO

**Rich Forcier** | CFO

## Board members

Abhishek Vinod Singh

Andre Turenne | Ashish Puri

David Mount | Rahul Saxena

Yashwanth Hemaraj | Jake Tauscher

John Alvarado | Martin Karschkes

Roman Kiwakyou | Varun Jain | Jay Koh

## Funding rounds

Series A | \$6M

Series B | \$27M

Series C | \$50M

## Key investors

Duke Energy | Lightrock

SE Ventures | G2VP

Edison International | Shell Ventures

Benhamou Global Ventures

National Grid Partners | Lightsmith Group

Marubeni | Sabanci Ventures

AiDash is making critical infrastructure industries climate-resilient and sustainable, through the use of satellite analytics and AI to monitor assets at scale. AiDash's platform combines the power of disparate data sources, case-specific AI models, and cognitive apps. The platform is well suited to serve a wide range of applications including electric, water, and gas utilities, transportation, and mining. Customers are able to optimize operations, mitigate business pain points, and deliver a positive ROI within the first year of deployment.



# Amogy



## Brooklyn | New York

founded 2020  
headcount 214

## Management

**Seonghoon Woo, PhD** | Chairman, Co-Founder, CEO  
**Christian Berg** | MD, Amogy Norway  
**Daniel MacCrimble** | COO  
**Young Suk Jo, PhD** | Co-Founder, CTO  
**Jongwon Choi, PhD** | Co-Founder, VP Manufacturing  
**Hyunho Kim, PhD** | Co-Founder, VP Innovation - Tech Transfer

## Board members

Undisclosed

## Funding rounds

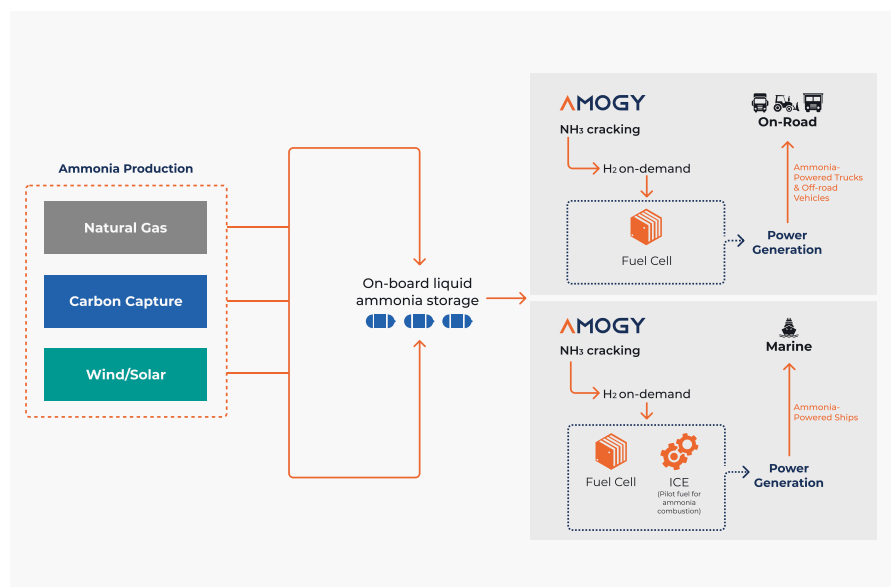
2021 | \$20M  
 2022 | \$46M  
 2023 | \$150M

## Key investors

AP Ventures  
 Amazon's Climate Pledge Fund  
 SK Innovation  
 Saudi Aramco Energy Ventures



Amogy offers ammonia-based, emission-free power solutions to decarbonize transportation and power generation. Given the ease and affordability of transporting and storing ammonia, Amogy is able to offer a low-cost and zero-carbon alternative to traditional fossil fuels and is well suited to serving markets including maritime, distributed power generation, hydrogen generation, and heavy duty transportation. As an added benefit, ammonia-based generation offers independence from congested or unreliable electrical grids for applications including shore power, EV charging stations, and data centers. Amogy's high-efficiency, scalable ammonia-to-power technology is on track to eliminate 5B+ metric tons of CO<sub>2</sub>-eq emissions by 2040.



# Anovion Technologies

**ANOVIION™**  
TECHNOLOGIES

## Chicago | Illinois

founded 2022  
headcount 30

## Management

**Chip Dunn** | Co-Founder and Chairman  
**Clay Kiefaber** | CEO  
**Sam Chong** | CFO  
**Pieter Barnard, PhD.** | COO  
**Vikram Rao, PhD.** | CTO  
**Jeremy Schrooten, PhD.** | VP Technology

## Board members

Chip Dunn | Pieter Barnard, PhD. | Vikram Rao, PhD.  
Clay Kiefaber | Chris Meyers | Michael Carter  
General Peter Pace | Don Stebbins | Tatjana Vujic  
Christoph Henkel | Frank Simpkins | Bruce Cleaver  
Pablo Koziner | Megan Murphy | David Kowalski  
Bill Johnson | Scott Thomsen | Doug Oberhelman

MATERIALS



## Funding rounds

\$80M Equity raised to date  
2022 | \$117M DOE Grant  
2024 | \$100K DOD SBIR Grant  
2024 | \$25-45M (targeted)

## Key investors

Monomyth Group  
Amsted Industries

Anovion Technologies is a U.S.-owned and U.S.-based advanced materials business with modest but growing commercial-scale manufacturing of premium, anode-grade synthetic graphite. As a leader in clean energy production of lithium-ion battery materials, Anovion Technologies is a key domestic source of this critical mineral that makes up 95%+ of the anode electrode that powers electric vehicles, energy storage systems for critical grid infrastructure, medical devices, and military and defense applications. With China currently dominating 97% of global capacity, the company's strategic vision is focused on growth and innovation, positioning Anovion as a climate tech-driven leader in the U.S. energy transition and helping to secure the domestic energy supply chain, while reshoring meaningful manufacturing jobs to the United States.



# Antora



## Sunnyvale | California

founded 2018  
headcount 100+

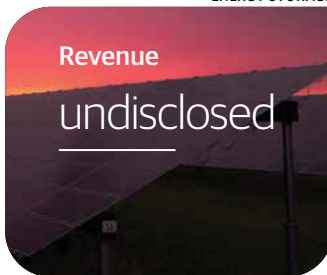
## Management

**Andrew Ponec** | Co-Founder, CEO  
**Dr. Justin Briggs** | Co-Founder, COO  
**Dr. David Bierman** | Co-Founder, CCO

## Board members

Undisclosed

ENERGY STORAGE



## Funding rounds

\$230M raised to date

## Key investors

Decarbonization Partners  
Trust Ventures  
Lowercarbon Capital  
Breakthrough Energy Ventures  
Emerson Collective  
The Nature Conservancy | BHP Ventures  
Grok Ventures | GS Futures | Overture VC

Antora is developing thermal batteries that convert intermittent renewable electricity into reliable, zero-emission industrial heat and power. Renewable electricity is used to heat blocks of solid carbon to glowing-hot temperatures (as high as 2,400 degrees Celsius) in an insulated module. The stored heat is then delivered at scales and temperatures that large industrial operations demand. In addition, Antora's heat-to-power thermophotovoltaic (TPV) technology allows the thermal battery to generate electricity directly from stored heat, without the need for a steam loop, turbine or any moving parts.



# Aperia



## Hayward | California

founded 2010  
headcount 130

### Management

**Josh Carter** | Co-Founder, CEO  
**Brandon Richardson** | Co-Founder, CTO  
**Bill Hoover** | CFO  
**Andy Ramans** | COO  
**Ralph Dimenna** | CCO

### Board members

Jon Morrison  
 Kathleen Ligocki  
 Blair Barlow  
 Jack Fuchs  
 Bob Stefanski

TRANSPORT



### Funding rounds

\$110M raised to date

### Key investors

MERS  
 Lime Rock New Energy  
 Blackhorn Ventures  
 Tenfore Holdings  
 EnerTech Capital  
 Trucks Venture Capital

Aperia Technologies offers the most comprehensive, user-friendly lineup of tire management solutions available to commercial fleets worldwide. With a million tires under management, Aperia leads the industry with active inflation and predictive maintenance technology. The company's comprehensive suite of tire management solutions, capable of fully optimizing fleet tire management practices, includes Halo Connect®, Halo Trailer Connect, and Halo Tire Inflator®. All solutions improve fuel economy and road safety while reducing fleet tire expenditures, downtime, and maintenance costs.



# Arcadia

## Washington | DC

founded 2014  
headcount 800+

### TECHNOLOGY PLATFORMS

Revenue

**\$50-100M**

Near-term target

## Management

**Kiran Bhatraju** | Founder, CEO  
**Pat McCamley** | President  
**Paul Mulé** | CFO  
**Barbara Clay** | GC

## Board members

Kiran Bhatraju | Ben Kortlang  
Sameer Reddy | Tanya Barnes  
Jeffrey Ubben | Eric Scheyer  
Greg Callman | John Rettig  
Jen Dulski | Alex Laskey

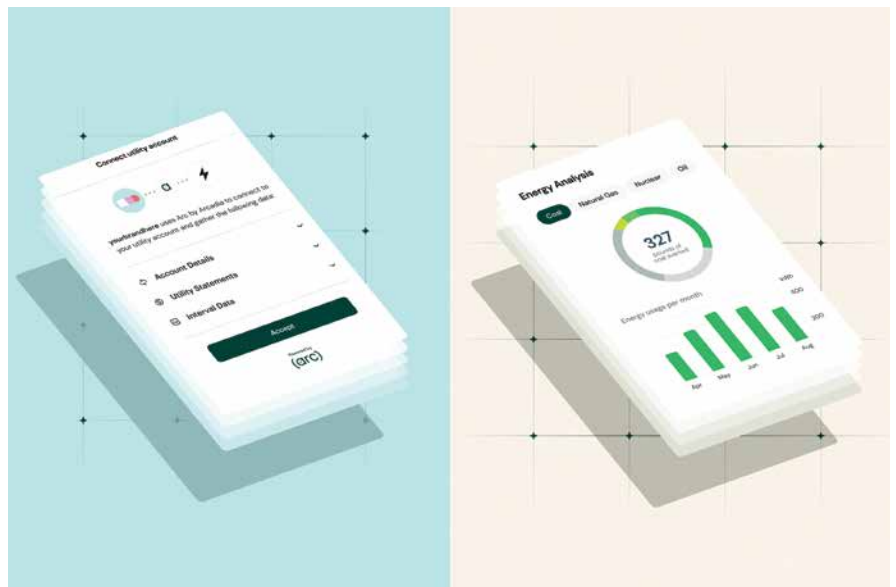
## Funding rounds

Seed | \$1M  
Series A | \$6M  
Series B | \$21M  
Series C | \$22M || Series C-1 | \$21M  
Series D | \$100M  
Series E | \$155M || Series E-1 | \$50M  
Convertible Note | \$175M

## Key investors

Energy Impact Partners | G2VP  
JPMorgan Chase | Macquarie Asset Management  
Inclusive Capital Partners | Elda River  
Camber Creek | Drawdown Fund  
Keyframe Capital | Tiger Global | Broadscale  
BoxGroup | Wellington | Oak HC/FT  
Salesforce Ventures

Arcadia is a climate technology company, focused on enabling a zero-carbon economy for both residential and commercial customers. The Arc platform combines easy-to-use data and APIs, allowing individuals and companies to understand and optimize their energy use and consumption patterns. Arc aggregates data from thousands of utilities in over 50 countries, including 95% of all utility customers domestically, and is able to offer deep insights on its platform as a result. Arcadia remains one of the leading operators of community solar, with more than 2GW of solar under management.



# Ascend Elements



Westborough | Massachusetts

founded 2015  
headcount 249

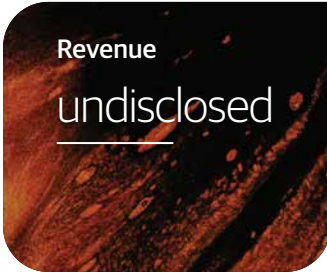
## Management

- Mike O’Kronley | CEO
- Eric Gratz, PhD | CTO
- Andrew Aberdale | CFO
- Daniel P. Russell | COO
- Ian Braime | CCO

## Board members

- Mike O’Kronley
- David Kim | Kojo Ako-Asare
- Kelly Kay | Eitan Dekel
- Faysal Sohail | Scott M. Jackson
- Aruna Ramsamy

MATERIALS



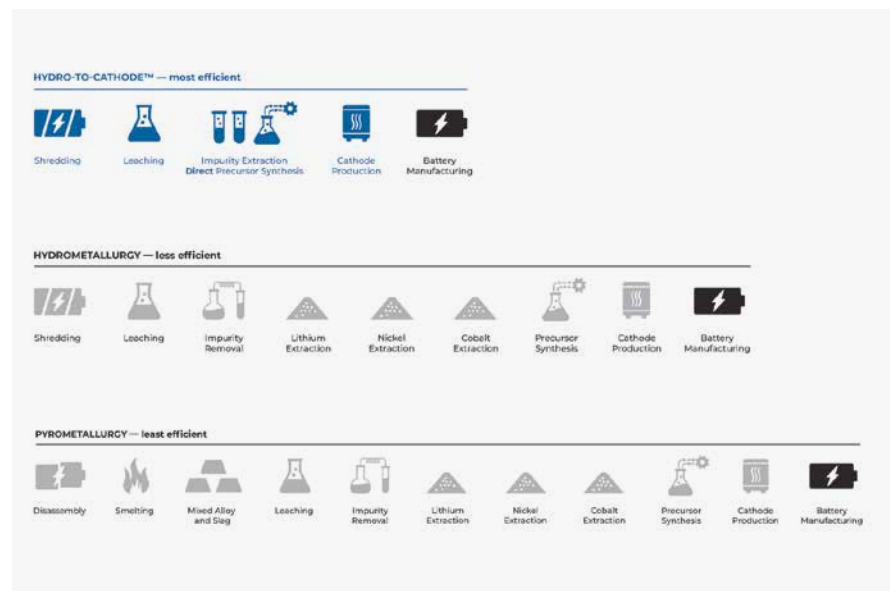
## Funding rounds

- 2021 | \$90M
- 2022 | \$300M
- 2023 | \$542M
- 2024 | \$162M

## Key investors

- Fifth Wall
- SK ecoplant
- OIA
- Decarbonization Partners
- Temasek
- Qatar Investment Authority

Ascend Elements is revolutionizing the market for lithium-ion battery materials by establishing a clean and sustainable supply chain using recycled feedstock. The Hydro-to-Cathode direct precursor synthesis technology produces new cathode materials from spent lithium-ion cells, more efficiently than competing methods that often require multiple steps and use a lot of energy. Ascend not only lowers GHG emissions, but also drives down cost and improves cell performance. By delivering engineered materials at lower cost, Ascend Elements is able to greatly improve the cost effectiveness of battery recycling, and reduce the need to mine and process raw materials.



# Brimstone Energy



## Oakland | California

founded 2019  
headcount 42

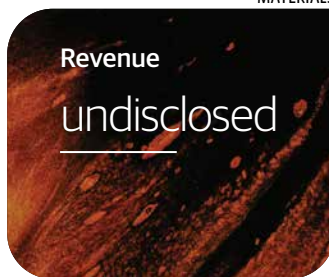
## Management

Cody Finke | CEO  
Hugo Leandri | CSO  
Lottie Rezneck | COO

## Board members

Cody Finke  
Hugo Leandri  
Cooper Rinzler

MATERIALS



## Funding rounds

Seed | \$7.5M  
Series A | \$55M  
Grants & Grant Commitments | \$191M

## Key investors

Breakthrough Energy Ventures  
DCVC  
Amazon Climate Pledge  
Fifth Wall  
S2G  
Collaborative Fund

Brimstone has reengineered the cement manufacturing process to largely eliminate carbon emissions, while still delivering the same product used by builders for decades. The cement industry is a significant source of emissions, accounting for 7.5% of global CO<sub>2</sub> emissions and 5.5% of total greenhouse gas emissions. With construction-related demand continuing to grow, annual cement production now exceeds 4 billion metric tons annually. Brimstone is able to produce industry-standard Portland cement using carbon-free calcium silicate rock instead of limestone. In addition to the calcium, silicon, iron, and aluminum typically present in cement, Brimstone's material contains magnesium which is used to passively and permanently remove atmospheric CO<sub>2</sub>. The result is deeply decarbonized, industry-standard Portland cement and supplementary cementitious materials that are sourced from a single rock.



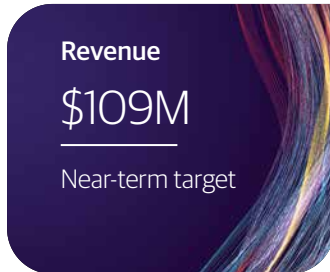
# Budderfly



## Shelton | Connecticut

founded 2017  
headcount 310

### TECHNOLOGY PLATFORMS



## Management

**AI Subbloie** | Founder, CEO  
**Paul Schmidt** | COO  
**Tom Flynn** | Chief Admin. Officer, General Counsel  
**Peter Dacey** | CFO  
**Rob Simons** | Chief Sales Officer  
**Jodi Susman** | CMO

## Board members

John Mahoney  
 Shirley Reece  
 Debra Koenig  
 Dennis Maloney  
 Todd Bright  
 Patrick Langan  
 AI Subbloie

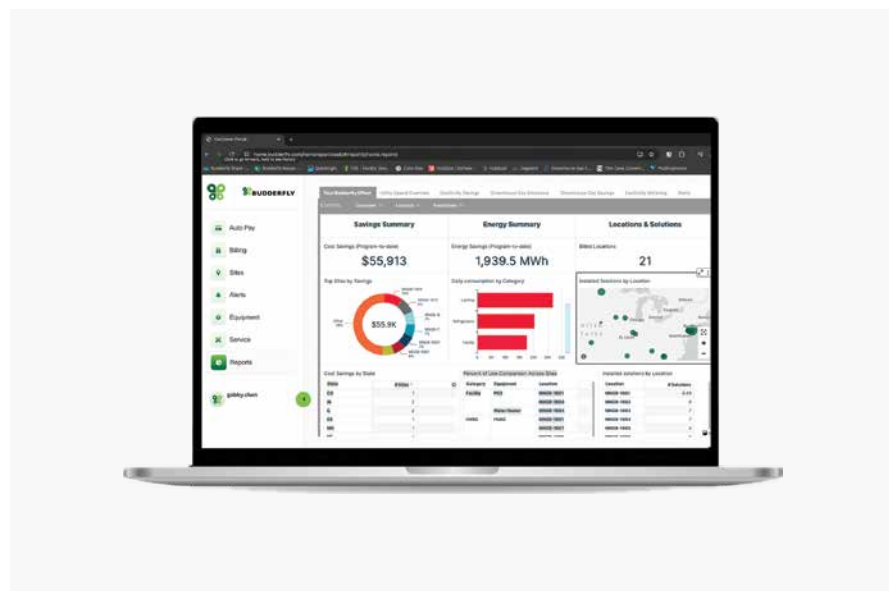
## Funding rounds

\$397M raised to date

## Key investors

Partners Group

Budderfly's energy-as-a-service offering provides 100% of the capital required to implement efficiency and sustainability-focused upgrades at commercial sites. Customers including restaurants, retail sites, health facilities and others benefit through lower energy use, better sustainability and lower capital requirements. Budderfly installs, monitors, and manages a combination of patented technologies, high-efficiency equipment, and proprietary energy software for its customers.



# Carbon America



## Arvada | Colorado

founded 2019  
headcount 53

## Management

**Brent Lewis** | Chairman, CEO  
**Nicole Johnson** | CFO  
**Craig Spreadbury** | COO  
**Miles Abarr** | CTO  
**Scott Frazier** | CIO

## Board members

Frank O'Sullivan  
Ashwin Shashindranath  
Brent Lewis

CARBON ECONOMY



## Funding rounds

2020 | \$7M  
2021 | \$29M  
2022 | \$15M  
2023 | \$29M

## Key investors

ArcTern Ventures  
CPP Investments  
Energy Impact Partners  
Neglected Climate Opportunities  
(part of Grantham Foundation)  
S2G Ventures

Carbon America is a vertically integrated carbon capture and storage (CCS) developer, owner, and operator with a focus on decarbonizing the energy and industrial sectors. The company intends to address the entire CCS value chain, and will own and operate projects while providing carbon capture to customers as a service. Vertical integration allows the many aspects of CCS to be offered as a comprehensive, simple solution to partners and customers, which should smooth adoption of the technology. While open to utilizing the best solution for any given project, Carbon America does offer its own proprietary carbon capture technology, which the company believes is competitive in terms of both cost and captured emissions. Carbon America is currently developing three ethanol plants that should reduce CO<sub>2</sub> emissions by 525K metric tons annually, once in operation.



# Carbon Clean



## London | United Kingdom

founded 2009  
headcount 166

CARBON ECONOMY



## Management

**Aniruddha Sharma** | Co-Founder, Chairman & CEO  
**Prateek Bumb** | Co-Founder, CTO  
**Iain Tobin** | Chief Corporate & Financial Officer  
**Krishna Singhania** | Chief Growth Officer  
**Levi Quinn** | Chief Delivery Officer

## Board members

Aniruddha Sharma  
 Prateek Bumb  
 Martin Pugh  
 Praveen Sahay  
 Daniel D Droog  
 Julian Waldron

## Funding rounds

Series A | \$6M  
 Series B | \$32M  
 Series C | \$150M

## Key investors

Chevron | AXA Investment Managers  
 Samsung Venture Investment  
 Saudi Aramco Energy Ventures | TC Energy  
 CEMEX Ventures | Marubeni  
 Wave Equity Partners

Carbon Clean is a leading provider of carbon capture solutions for hard-to-abate industries including cement, steel, oil refining, and energy from waste. Carbon Clean's fully modular technology, CycloneCC, is a cost-effective, scalable carbon capture, utilization and storage (CCUS) technology that should enable industries to capture over 90% of their CO<sub>2</sub> emissions. With 49 facilities deployed globally, Carbon Clean's patented technology has abated over 2.2 million metric tons of carbon to date. Carbon Clean offers a full suite of offerings to help customers achieve their net-zero targets, including technology licenses and solvent supply, a full process design package and proprietary equipment, and end-to-end systems support.



# Cirba Solutions



## Charlotte | North Carolina

founded 1991  
headcount 126

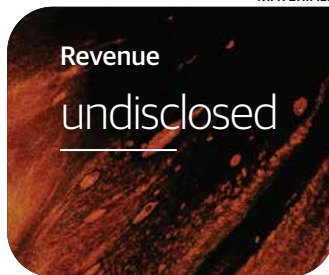
## Management

David Klanecky | President, CEO  
John Kelly | COO  
Jay Wago | CCO  
Erin Sharpe | CFO

## Board members

Luke Kissam  
Jan Vliegen  
Amy Schumacher  
Jeff Laborsky  
Chad Peterson  
Steven Kinsbursky  
JD Vargas

MATERIALS



## Funding rounds

2020 | \$2M  
2022 | \$245M  
2023 | \$50M  
Total DOE Grant Funding | \$157M

## Key investors

EQT Infrastructure Fund  
Marubeni

Cirba Solutions is a leading battery recycling platform in the U.S., having served over 7,000 customers to date and recycled hundreds of millions of pounds of material over the course of the company's history. Cirba's advanced processing and material upgrading capabilities recycle old batteries, extract valuable materials, and produce cathode-grade materials that are reintroduced into the manufacturing marketplace.



# Circular



## London | England

founded 2019  
headcount 50

## Management

Doug Johnson-Poensgen | Founder, CEO

## Board members

Steve Westly  
Robert Haynes-Brown  
Emily Fritze (Observer)  
Andrew Gilchrist (Observer)

## MATERIALS



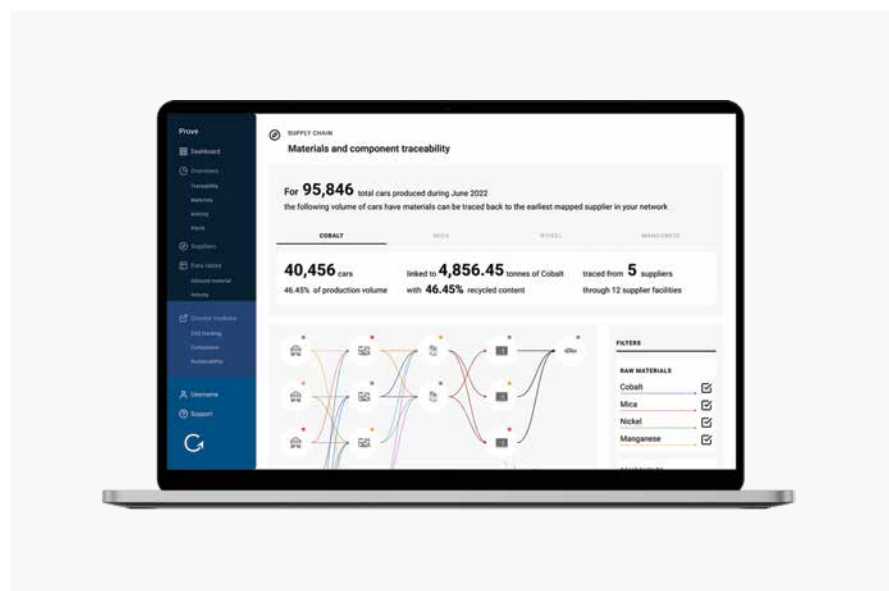
## Funding rounds

Seed | £3.5M in 2020  
Series A | £9M in 2021  
Series B | £20M in 2022

## Key investors

The Westly Group  
SYSTEMIQ  
Salesforce Ventures  
HG Ventures

Circular's platform enables companies to gain better visibility into their supply chains, enabling more responsible sourcing, improving ESG performance, reducing greenhouse gas emissions, and managing supply chain risk. By creating a digital twin at the source and tracking the digital identity of materials as they move through the supply chain, Circular's granular, real-time data allows users to track scope 1, 2, and 3 emissions as well as associated ESG data. Already used at scale by globally recognized brands, Circular operates the largest battery traceability network on the market, and is currently serving roughly 52% of global cell manufacturing capacity. The company's technology has provided supply chain visibility for over 670,000 electric vehicles to date.



# Climeworks



## Zurich | Switzerland

founded 2009  
headcount 474

CARBON ECONOMY



## Management

**Dr. Christoph Gebald** | Co-Founder, CEO  
**Dr. Jan Wurzbacher** | Co-Founder, CEO  
**Andreas Aepli** | CFO  
**Douglas Chan** | COO  
**Jan Huckfeldt** | CCO  
**Ann-Kristin Koch** | Chief COM & Branding Officer  
**Daniel Nathan** | Chief Project Dev. Officer

## Board members

**Dr. Christoph Gebald**  
**Dr. Jan Wurzbacher**  
**Dr. Iur. Martin Burkhardt**  
**Alfred Gantner**  
**Ulf Berg**  
**Syrie Crouch**  
**Dr. Maurits van Tol**

## Funding rounds

\$800M raised to date

## Key investors

**Partners Group** | GIC  
**Baillie Gifford** | Carbon Removal Partners  
**Global Founders Capital** | John Doerr  
**M&G** | Swiss Re | BigPoint Holding AG

Climeworks is a leading provider of direct air capture (DAC) technology that uses renewable energy, energy-from-waste, or other waste heat as an energy source. The company's just-opened Mammoth plant is the world's largest DAC facility, effectively making large-scale carbon dioxide removal a reality via the company's partnership with Icelandic carbon storage firm Carbfix. The Mammoth plant, powered by geothermal energy, has an annual capture capacity of 36,000 metric tons. We note that the DAC industry's previous recordholder plant was the Orca facility, at 4,000 metric tons per year, which was also owned and operated by Climeworks.



# C-Zero



## Santa Barbara | California

founded 2018  
headcount 28

## Management

Zach Jones | CEO  
Patrick Hanks | SVP of Technology

## Board members

Zach Jones  
Eric McFarland  
Fabien Duclocher  
Brian Mayers  
Chuljin Kim

CARBON ECONOMY



## Funding rounds

Series A | \$50M

## Key investors

SK  
Mitsubishi Heavy Industries  
Eni  
Engie  
Trafigura  
Breakthrough Energy Ventures  
AP Ventures

C-Zero is developing a drop-in decarbonization system, which can be placed in between existing natural gas infrastructure and industrial natural gas consumers. C-Zero's technology is a form of methane pyrolysis that uses thermocatalysis to extract carbon from natural gas as a dense solid, allowing for easy sequestration. This approach is well suited to serve a range of industries seeking to reduce their carbon footprints, including electricity generation, process heating, production of commodity hydrogen, ammonia synthesis and refining processes. Set to bring its first plant online by 2029, C-Zero anticipates that each large-scale plant (100,000 mt/year H<sub>2</sub>) has an NPV to the company of \$200M.



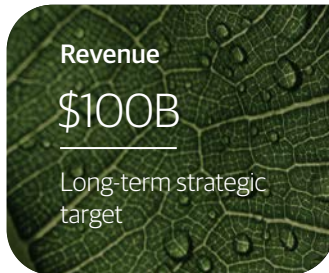
# Eavor



## Calgary | Canada

founded 2017  
headcount 120+

### ENERGY PRODUCTION



## Management

**John Redfern** | President, CEO  
**Paul Cairns** | CBDO || **Jason Rakochoy** | COO  
**Shyamli Mohamed** | CFO || **Matt Toews** | CTO  
**Daniel Mólk** | EVP, Europe Operations  
**Bailey Schwarz** | EVP, North America Operations  
**Jeanine Vany** | EVP, Corp. Affairs || **Robert Winsloe** |  
 EVP, Origination || **Cole Eslinger** | VP, Legal & GC

## Board members

**Douglas Beach** (Chairman)  
**Chad Brown**  
**Stephan Hannke**  
**Yuta Kano**  
**Finian Tan**  
**John Redfern**  
**Selin Bastin**

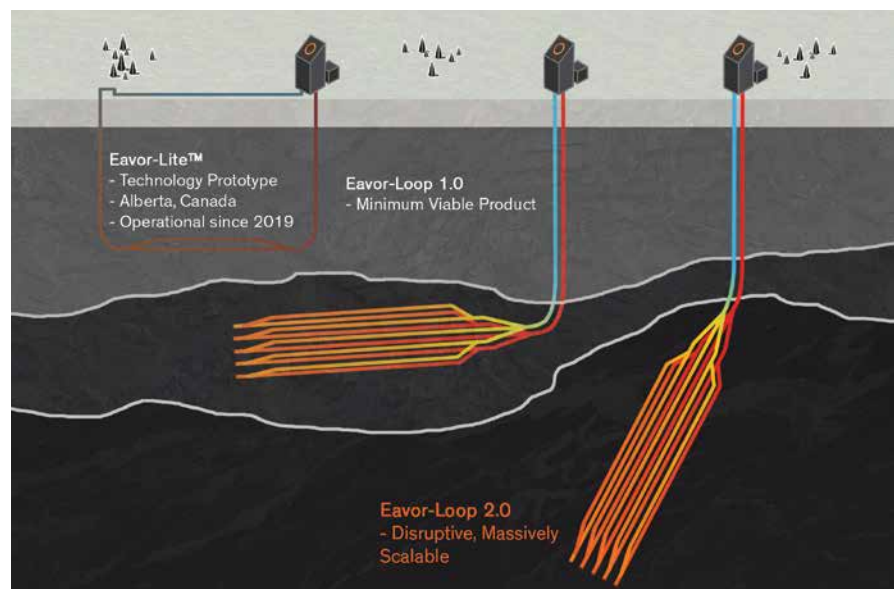
## Funding rounds

Series A | \$7.3M  
 Series B | \$53M  
 Growth Equity 2023 | \$182M  
 €91.6M Grant | European Innovation Fund  
 €131.6M | Project Financing

## Key investors

Vickers Venture Partners | BP Ventures  
 Canada Growth Fund | Chubu Electric Power  
 BDC Capital | Temasek | BHP Ventures  
 Microsoft | Helmerich & Payne Inc.  
 Precision Drilling | Kajima Corporation

Eavor is a geothermal technology company developing a closed-loop system that should offer reliable, carbon-free energy around the clock. The Eavor-Loop connects two vertical wells with multiple horizontal wellbores, effectively creating a closed, sealed-radiator system. Rather than depending on a geothermal reservoir, Eavor's working fluid is added to the system at the surface, then circulated through the system to generate electricity or thermal energy for commercial heating/cooling applications.



# Electric Hydrogen



## San Carlos | California

founded 2020  
headcount 366

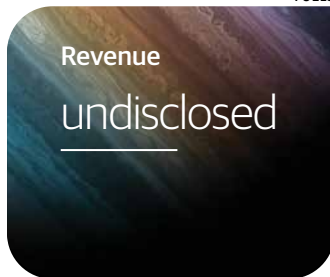
## Management

**Raffi Garabedian** | Co-Founder, CEO  
**David Eaglesham** | Co-Founder, CTO  
**Derek Warnick** | Co-Founder, CFO  
**Renata Naoumov** | Chief People Officer  
**Beth Deane** | Chief Legal Officer

## Board members

Undisclosed

FUELS



## Funding rounds

2021 | \$24M  
 2022 | \$198M  
 2023 | \$380M  
 DOE | \$46.3M

## Key investors

Breakthrough Energy | Capricorn  
 Energy Impact Partners | Fifth Wall  
 Prelude Ventures | S2G Ventures  
 Amazon | Cosan | Equinor  
 Honeywell | Mitsubishi | Rio Tinto  
 United Airlines | BP | Microsoft  
 Fortescue Metals

Electric Hydrogen (EH2) is a deep decarbonization company pioneering new technology for low-cost, high-efficiency, zero-carbon hydrogen production systems. Electric Hydrogen provides an integrated electrolysis plant that is designed with ease of construction in mind, and offers a modular system that helps drive down cost and prevent schedule overruns. Electric Hydrogen's first Gigafactory in Devens, MA came online in April 2024. Once fully ramped, the facility will have annual manufacturing capacity of 1.2 GW, and will manufacture the company's 100MW green hydrogen electrolyzers.



# EnergyX



## Austin | Texas

founded 2018  
headcount 85

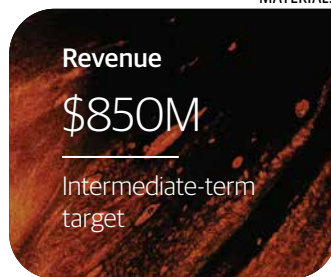
## Management

**Teague Egan** | Founder, CEO  
**Allen Satterwhite** | President  
**Dr. Amit Patwardhan** | CTO  
**Mayank Sharma** | CFO  
**Juan Carlos Barrera** | President, South America  
**Milda Saenz** | Chief of Staff

## Board members

**Teague Egan** (Chairman)  
**Kris Haber** (Vice Chairman)  
**Paul Leggett**  
**Stefon Crawford**  
**Michael Egan**

## MATERIALS



## Funding rounds

Series A | \$15M  
 Series B | \$50M  
 Retail | \$30M

## Key investors

General Motors Ventures  
 POSCO Holdings  
 Eni Next  
 IMM Investment Global  
 Obsidian Acquisition Partners  
 Elohim Partners

EnergyX is a renewable energy technology company, focused on enabling the affordability and broader use of lithium materials and energy storage technologies. Founded in 2018, EnergyX has developed a novel and proprietary suite of revolutionary lithium extraction and refinery (LiTASTM) technologies, as well as breakthrough lithium metal and solid state battery (SoLiSTM) technologies. EnergyX is optimizing the energy storage supply chain by innovating from mineral extraction all the way to battery production, while vertically integrating and owning mineral resources. The company is targeting rapid development of lithium extraction and refining projects in the US and South America.



# EnerVenue



ENERVENUE

## Fremont | California

founded 2020  
headcount 300

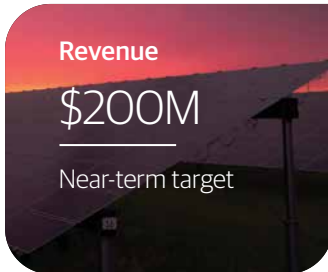
## Management

**Jorg Heinemann** | CEO  
**Randy Selesky** | CRO  
**Majid Keshavarz** | CTO  
**Rob Willy** | SVP, Operations  
**Julie Gruduski** | SVP, People

## Board members

Jorg Heinemann  
 Meng Sui  
 Prof. Yi Cui  
 Dan Carter  
 Arindam Bhattacharya  
 Alan Chan  
 Ashok Belani (Independent)

ENERGY STORAGE



## Funding rounds

Seed | \$12M  
 Series A | \$125M  
 Series B | \$300M

## Key investors

Aramco Energy Ventures  
 SLB New Energy  
 Towngas

EnerVenue is the leading provider of nickel-metal hydrogen batteries, offering customers a durable, safe and versatile building block for grid-scale and C&I storage applications. EnerVenue's energy storage vessels can be easily mounted in racks, containers, or stacked in customer warehouses, and do not require preventative fire suppression or supplementary HVAC. This results in a significant reduction to operating expenses and a lower cost-per-cycle when compared to lithium-ion batteries. EnerVenue recently announced the first phase of its manufacturing ramp, with a facility in Kentucky that will add one GWh of annual production. Over the coming years, EnerVenue plans to invest over \$1B, expanding its domestic manufacturing footprint to more than 20 GWh of annual capacity.



# Fervo Energy



## Houston | Texas

founded 2017  
headcount 99



## Management

**Tim Latimer** | Co-Founder, CEO  
**Jack Norbeck, PhD** | Co-Founder, CTO  
**David Ulrey** | CFO

## Board members

Anne Cleary  
Dave Danielson | Tanuj Dutta  
Tim Latimer | Jack Norbeck, Ph.D.  
Rachel Slaybaugh  
Jane Woodward  
Ion Yadigaroglu

## Funding rounds

2019 | \$11M  
2021 | \$28M  
2022 | \$138M  
2024 | \$244M  
DOE | \$25M

## Key investors

Congruent | 3X5 Partners | Elemental Excelsior  
Capricorn Investment Group | CPP Investments  
Breakthrough Energy Ventures | Liberty Energy  
DCVC | Impact Science Ventures | Macquarie  
Prelude Ventures | Devon Energy  
Grantham Foundation for the Protection of the Environment

Fervo provides 24/7 carbon-free energy utilizing next-generation geothermal power technology. Fervo's technology leverages over a decade of innovation in drilling and production from modern oil and gas development, leading to major improvements in system performance and well design. Fervo employs precision directional drilling technology to drill horizontally in geothermal reservoirs. This enables the company to drill multiple wells from a single location, dramatically lowering the surface footprint and reducing drilling risk. Horizontal drilling also enables greater access to geologies that were previously challenging to reach, increasing the total resource potential from geothermal energy.



# FirstElement Fuel

FE FUEL

## Irvine | California

founded 2013  
headcount 55

## Management

**Dr. Tim Brown** | Founder, President

**Dr. Shane Stephens** | Founder, Chief Dev. Officer

**John McFarland** | CEO

**John Finnucan** | CFO

**Ghassan Sleiman** | CTO

## Board members

Joel Ewanick (Founder, Chairman)

Tim Brown

Dr. Shane Stephens



## Funding rounds

2019 | \$24M

2020 | \$37M

2022 | \$105M

## Key investors

Mitsui

Air Liquid

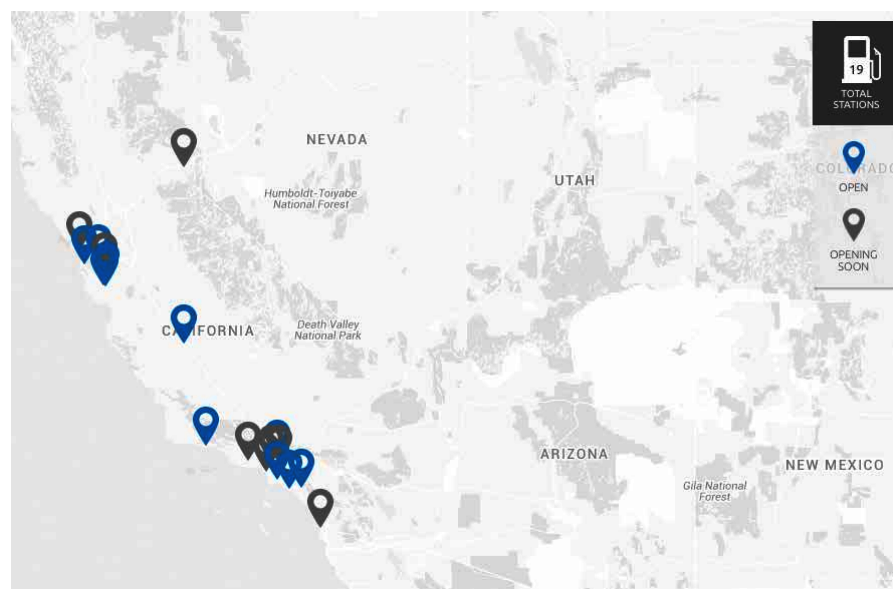
Nikkiso Co.

MUFG Bank

Japan Infrastructure Initiative Company

Air Water

FirstElement Fuel is a leading provider of quick-fill hydrogen stations that make hydrogen fuel readily available in California, and which one day may span the United States. The company's True Zero fueling infrastructure has been designed to be safe, non-toxic, and pose no environmental hazards, with a fill-up process similar to that of a gasoline pump. When consumed in a fuel cell vehicle, the only byproduct is water vapor that contains zero harmful emissions. FirstElement offers its customers the flexibility of an entirely integrated supply chain and manufacturing process that is able to rely entirely on domestic sources.



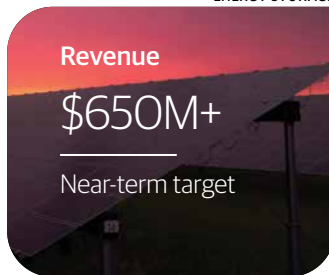
# FlexGen



## Durham | North Carolina

founded 2010  
headcount 215

### ENERGY STORAGE



## Management

**Kelcy Pegler** | CEO  
**Yann Brandt** | CCO  
**Diane Giacomozzi** | COO  
**Gary Cristini** | CFO  
**Pasi Taimela** | Chief Innovation Officer  
**Hugh Scott** | CTO

## Board members

**Olivia Wassenaar**  
**Trevor Mills**  
**Orme Thompson**  
**Jerry Miller**  
**Dirk McDermott**  
**Kelcy Pegler**

## Funding rounds

Series A | \$25.5M  
 Series B | \$150M  
 Series C | \$100M

## Key investors

Altira Group  
 Apollo Global Management  
 Vitol

FlexGen is a leading provider of integrated energy storage systems and software technology for utility-scale energy storage projects. FlexGen's software is hardware agnostic and has been integrated with a wide range of hardware solutions. This enables customers to either procure equipment through FlexGen or independently, which provides the most flexible approach to project execution while boosting cost saving opportunities. HybridOS, FlexGen's best-in-class energy management software platform, integrates tightly with storage devices in order to maximize the efficiency of the asset.



## FLO



## Québec | Canada

founded 2009  
headcount 550+

## TRANSPORT



## Management

**Louis Tremblay** | Co-Founder, President, CEO  
**Travis Allan** | Chief Legal and Public Affairs Officer  
**Francis Baillargeon** | CFO || **Martin Brière** | Chief  
 Network and Experience Officer || **Sébastien  
 Desrochers** | Chief Talent Officer || **Alexandre Louis**  
 | CRO || **Martine St-Onge** | Chief Manufacturing Ops  
 Officer || **Chris Thorson** | CMO || **Nathan Yang** | CPO

## Board members

Tom Werner (Independent Chair)  
 Louis Tremblay (CEO)  
 Dany St-Pierre | Renée Bergeron  
 Cassie Bowe | Pierre Nelis  
 Richard Cherney | Philippe Bonin

## Funding rounds

2014 | \$5M  
 2016 | \$11.2M  
 2019 | \$13.5M  
 2020 | \$53M  
 2021 | \$40M

## Key investors

Energy Impact Partners  
 MacKinnon, Bennett & Company  
 Caisse de Dépôt et de Placement du Québec  
 Investissement Québec

FLO operates one of the largest networks of EV charging stations in North America, and offers its customers a complete portfolio of charging solutions in an effort to help accelerate the adoption of electric vehicles. The network spans 100k+ fast and L2 charging stations that provide more than 1.5 million charging events each month at public and private locations. Serving both residential and commercial customers, FLO's vertically integrated approach offers customers the most flexibility while maximizing uptime for the system.



# Form Energy



## Somerville | Massachusetts

founded 2017  
headcount 713

## Management

**Mateo Jaramillo** | Co-Founder, CEO  
**Charlotte Beard** | CFO

## Board members

Undisclosed

ENERGY STORAGE



## Funding rounds

\$920M+ raised to date

## Key investors

TPG | Coatue | Energy Impact Partners  
Breakthrough Energy Ventures  
CPPIB | ArcelorMittal  
Prelude Ventures | The Engine  
Temasek | GIC

Form Energy is a long-duration energy storage company that is developing an iron-air battery capable of storing up to 100 hours of electricity indefinitely. The system's active ingredients – iron, water, and air – are not only safe, but abundant, and make the multi-day battery system cost competitive with legacy power plants. The cells incorporate iron and air electrodes, and are filled with water-based, non-flammable electrolyte. The modules are then grouped together in modular megawatt-scale power blocks. The scalable design allows Form to serve a range of customer needs, with most deployments including tens to hundreds of power blocks. Designed to complement the function of lithium-ion batteries, Form's iron-air battery allows for an optimal balance of resources, delivering the lowest-cost renewable and reliable electricity year-round.



# Group14

# GROUP14

## Woodinville | Washington

founded 2015  
headcount 400+

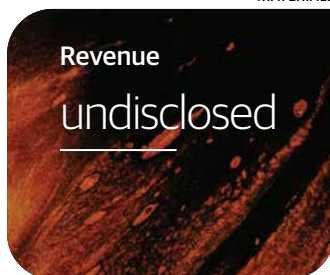
## Management

Rick Luebbe | CEO  
Rick Costantino | CTO  
Mike Willis | CFO  
Eric Robinson | COO  
Chris Piercy | CCO

## Board members

Rick Luebbe  
Kim Ann Mink  
Robert Lutz  
Gerry Langelier  
Michael Steiner

MATERIALS



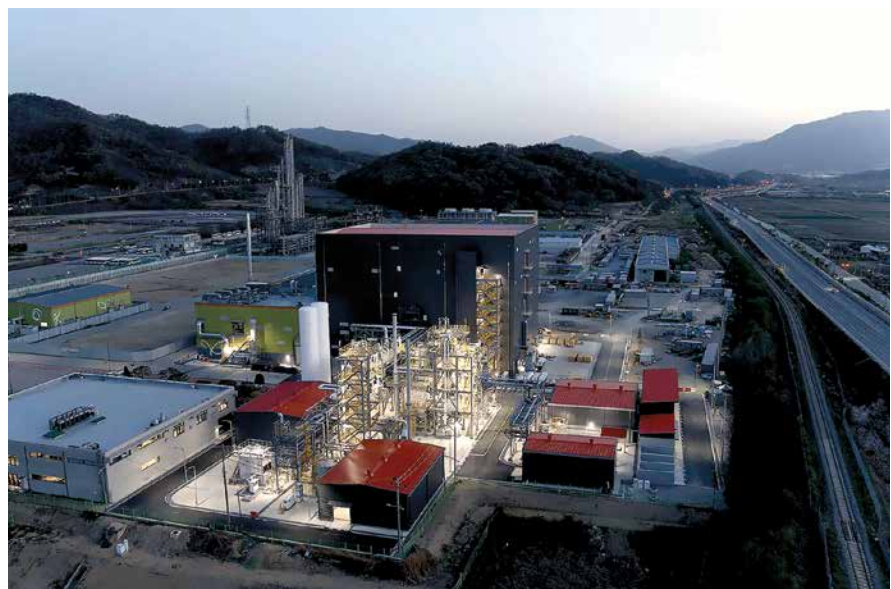
## Funding rounds

Series A | \$18M  
Series B | \$17M  
Series C | \$614M

## Key investors

Porsche AG  
Microsoft Climate Impact Fund  
Decarbonization Partners  
OMERS | Riverstone  
Lightrock Climate Impact Fund  
BASF Venture Capital  
OVP Venture Partners

Group14 is driving the development of new lithium battery technologies that dramatically increase energy density and improve charging times. By manufacturing stable, silicon-carbon composite anodes with 5x the capacity of graphite, Group14 enables up to 50% more energy density relative to conventional graphite for lithium battery anodes. The company's unique hard carbon-based scaffolding keeps silicon in the most ideal form – amorphous, nano-sized, and carbon-encased. This makes the technology well suited to drive adoption of EVs in addition to consumer electronics, grid storage, aerospace, and personal mobility applications. To reach commercial scale, Group14 has designed a repeatable module-based manufacturing process that should enabled scaling easily and quickly.



# Heirloom Carbon



## Brisbane | California

founded 2020  
headcount ~130

## Management

**Shashank Samala** | Co-Founder and CEO

**Dr Noah McQueen** | Co-Founder, Head of Research

**Albert Luu** | Head of Finance

**Max Scholten** | Head of Commercialization

**Andy Dubel** | Head of Engineering

## Board members

Undisclosed

CARBON ECONOMY



## Funding rounds

\$85M raised to date

## Key investors

Breakthrough Energy Ventures

Carbon Direct Capital Management

Ahren Innovation Capital

Prelude Capital

Lowercarbon Capital

Microsoft

Heirloom's Direct Air Capture (DAC) system utilizes limestone, one of the earth's most abundant and inexpensive materials, to capture CO<sub>2</sub> directly from the atmosphere. Captured material is then permanently stored underground or sequestered in materials like concrete. Limestone, which accounts for roughly 4% of the materials at the Earth's surface, is not only cost effective at ~\$10/ton, but also easier to source than custom engineered materials. With a modular design, Heirloom's DAC facilities offer a simple and scalable design that delivers low cost and excellent performance.



# Hydrostor



## Toronto | Canada

founded 2010  
headcount 100

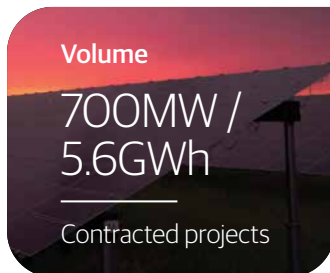
## Management

**Curtis VanWalleghem** | Co-Founder, CEO  
**Jon Norman** | President || **Beth Summers** | CFO  
**Chris Phebus** | CTO || **Jordan Cole** | CCO  
**Patrick Moyer** | GC || **Sarah Skinner** | CHRO  
**Scott Bolton** | EVP, Regulatory & Policy  
**Tom Duckett** | CDO  
**Fong Wan** | Advisor || **Rogers Herndon** | Advisor

## Board members

Ron Miller (Chairman)  
 Curtis VanWalleghem  
 Judith Johansen  
 Sebastien Gagnon  
 Gunduz Shirin  
 Curtis Bartlett

## ENERGY STORAGE



## Funding rounds

\$325M raised to date

## Key investors

Goldman Sachs Asset Management  
 Canada Pension Plan Investments

Hydrostor is a leading developer and operator of long duration energy storage systems, leveraging a proven solution for delivering long duration energy storage (eight hours or more) to power grids around the world. The company's technology uses compressed air and water to store energy in underground hard-rock caverns, which can be sited near grid interconnections, renewable power generation plants or commercial and industrial facilities. Hydrostor currently operates a successful utility-scale commercial reference facility, with advanced projects under development in Kern County, California (500MW) and in New South Wales, Australia (200MW). Hydrostor has a 7GW pipeline of future projects in North America, Australia, the UK and Europe.



# Infinitem



## Round Rock | Texas

founded 2016  
headcount 150

## Management

**Ben Schuler** | Founder, CEO  
**Rick Tewell** | President, COO  
**Bob Brown** | CFO

## Board members

Ben Schuler  
Milo Werner  
Benoit Grobon  
Jaime Aguirre  
John Staudinger  
Dave Blivin  
Mark Watson

### TECHNOLOGY PLATFORMS

#### Revenue

**\$1B+**

Long-term strategic  
target

## Funding rounds

Series A:D | \$165M  
Series E | \$185M

## Key investors

Just Climate | NGP  
Galvanize | Riverstone | Cottonwood  
Ajax | Rockwell Automation  
Caterpillar | Chevron  
Applied Materials | ARLP

Infinitem is developing a new type of induction motor to improve efficiency, reliability, and ease of implementation. The company estimates that its Aircore EC motor can reduce electricity consumption by ~10% as compared to a traditional AC induction motor. By etching copper coils directly onto a PCB stator, Infinitem is able to eliminate the heavy steel core and copper windings of a conventional motor. The motor's high-frequency, high-voltage drive electronics are enabled by the use of wide bandgap silicon carbide power electronics. The result is a much smaller, lighter motor with superior performance characteristics. Manufacturing is well suited to automation, which ensures repeatable, consistent quality and results in an easy to install solution. Infinitem also provides plug-and-play monitoring and a control software platform.



# Koloma



## Denver | Colorado

founded 2021  
headcount 39

MATERIALS



## Management

**Pete Johnson** | CEO  
**Jeff Knupp** | CFO  
**Tom Darrah, PhD** | CTO  
**Erik Scher, PhD** | CCO  
**Paul Harraka** | CBO

## Board members

Pete Johnson  
Charles Griffee  
Christian Garcia  
Duane Dickson  
Jim Farnsworth  
Lisa Stewart  
Shayle Kann

## Funding rounds

Series A | \$91M  
Series B | \$245M

## Key investors

Breakthrough Energy Ventures  
Energy Impact Partners  
Prelude Ventures  
Evok Innovation  
PIVA | Khosla Ventures | United  
Amazon Climate Pledge Fund

Koloma is a hydrogen company that leverages its technology, proprietary data, and human capital advantages to identify and commercialize geologic hydrogen on a global scale. Geologic hydrogen originates from iron-rich resource rocks, as compared to the mature, organic (carbon-rich) source rocks that generate oil and gas. Koloma is able to produce hydrogen with a low carbon footprint, with no external water required to support electrolysis, no external energy inputs, and minimal surface disruption. By sourcing hydrogen in a clean, continuous, and cost-effective manner, Koloma is eliminating barriers that have historically hindered widespread adoption of hydrogen as an energy source.



# KORE Power



## Coeur d'Alene | Idaho

founded 2018  
headcount 165

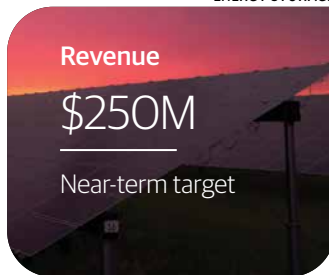
## Management

**Lindsay Gorrill** | Founder, CEO  
**Jay Bellows** | President  
**Alexander Nickolatas** | CFO  
**Mike Canada** | COO  
**Jack Wu** | CTO  
**Aleysha Newton** | CMO

## Board members

Undisclosed

### ENERGY STORAGE



## Funding rounds

Series A | \$90M  
 DOE, LPO, Conditional Commitment | \$850M

## Key investors

Siemens  
 Nidec  
 Honeywell  
 Quanta

KORE is a leading U.S. based developer of battery cell technology, and an integrated solution manufacturer for the energy storage and e-mobility sectors. The company believes that it should be able to deliver superior performance and cost-competitiveness with its plans to vertically integrate its manufacturing process. Central to that plan are KORE's K155 NMC cell and K2280 LFP cell, which are integrated into the DC blocks that KORE delivers to customers. The vertical integration model planned for KORE's facilities in Vermont and Arizona set the stage for self-reliant domestic manufacturing supported by domestic supply chains. KORE's strategy, if successful, could position the company to be a large-scale supplier to US-based manufacturers of EVs and stationary storage.



Leap



## San Francisco | California

founded 2017  
headcount 77

### TECHNOLOGY PLATFORMS

Revenue

**\$10-20M**

Intermediate-term  
target

## Management

**Thomas Folker** | Co-Founder, CEO  
**Andrew Hoffman** | Chief Development Officer  
**Jason Michaels** | Chief Revenue Officer  
**Susie Dirks** | VP of Product & Engineering

## Board members

Thomas Folker  
Remco van den Elzen  
Nick Grossman  
Carly Brantz  
Logan Ashcraft

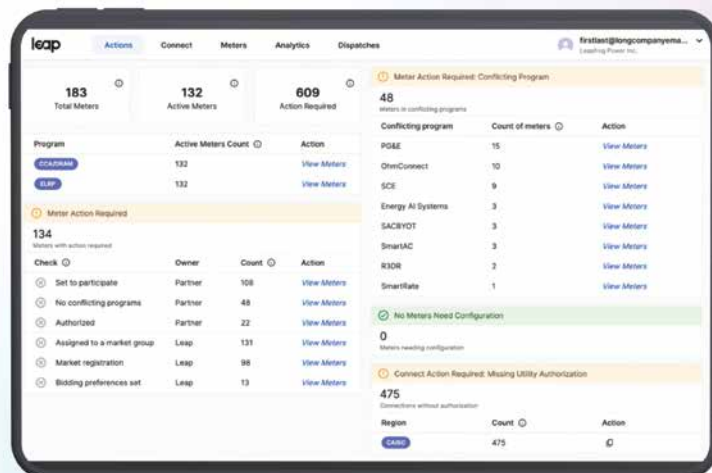
## Funding rounds

Series A | \$8.2M  
Series B | \$25M  
Series B-EXT | \$16M

## Key investors

Union Square Ventures  
National Grid Partners  
Congruent Ventures  
Elemental Excelerator  
Park West Asset Management  
Standard Investments  
Presidio Ventures

Leap's platform facilitates easy access to energy markets for distributed energy resources, enabling energy devices to generate revenue while providing support to the grid. Rather than controlling hardware, Leap looks to integrate partners directly onto Leap's platform, where customers are then able to trade into demand response markets and other grid service programs across multiple markets in the United States. Leap enables its partners and their customers to become active participants in creating a more stable grid, increasingly powered by renewable power.



# LevelTen



## Seattle | Washington

founded 2016  
headcount 146

TECHNOLOGY PLATFORMS

Revenue  
undisclosed

## Management

**Bryce Smith** | Founder, CEO  
**Ross Trenary** | CFO  
**Ryan Warren** | CCO  
**Jason Tundermann** | COO  
**Andrew Bishop** | CPO  
**Eric Snyder** | CTO

## Board members

Undisclosed

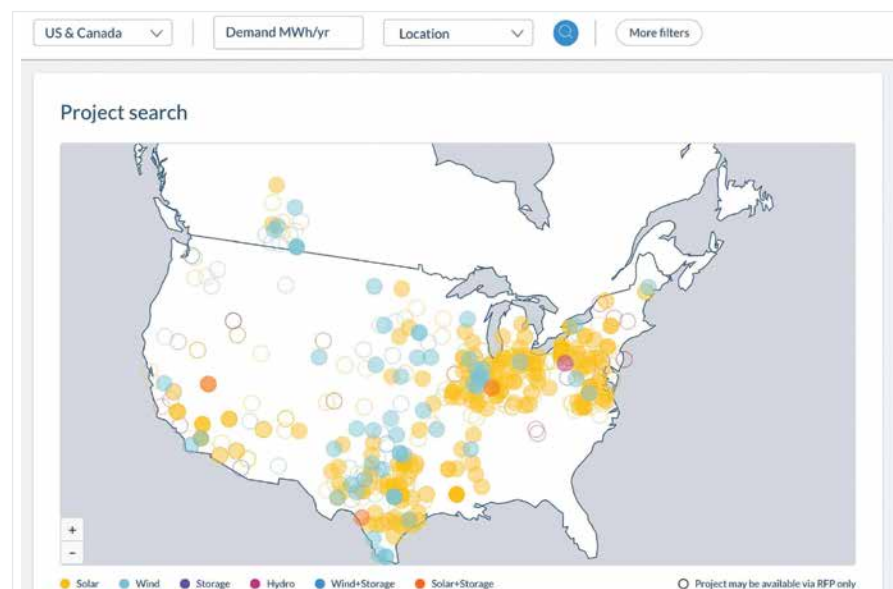
## Funding rounds

Series A | \$6.8  
 Series B | \$20.5M  
 Series C | \$45M

## Key investors

Prelude  
 Techstars Venture Capital Fund  
 Founders' Coop  
 Wireframe Ventures  
 Element 8 Fund  
 Avista Development  
 NGPETP

LevelTen is a leading provider of renewable energy transaction infrastructure, delivering the marketplaces, software, automated analytics, and expertise required to accelerate clean energy transactions. LevelTen operates the industry's largest two-sided marketplace for renewable energy power purchase agreements, serving renewable energy buyers, sellers, advisors, asset owners and financiers. To date, LevelTen has facilitated over 4,500 PPA offers across 28 countries.



# Lilac Solutions



## Oakland | California

founded 2016  
headcount 200

MATERIALS



## Management

**Raef Sully** | CEO  
**Dave Snyder** | CTO  
**David Gelin** | CFO  
**Nick Goldberg** | CLO  
**Tom Wilson** | CDO

## Board members

David Danielson  
Clay Dumas  
Brian Falik  
Ian Pearce  
Raef Sully  
Dave Snyder

## Funding rounds

Series A | \$20M  
Series B | \$150M  
Series C | \$145M

## Key investors

T Rowe Price | Lowercarbon Capital  
Breakthrough Energy Ventures | Mercuria  
The Engine | SK Materials  
BMW i Ventures  
Sumitomo Corporation | Mitsubishi

Lilac Solutions is a lithium extraction company that is positioned to rapidly expand lithium production in support of the EV transition. Lilac has developed an ion exchange technology that facilitates production of lithium from brine resources without the need for evaporation ponds. Lilac's process not only reduces environmental impact but also accelerates project development timelines significantly, increases recovery, and yields a high-purity product when compared to traditional lithium mining. Offering a full-service approach, Lilac intends to design, build, and operate its lithium extraction sites around the world.



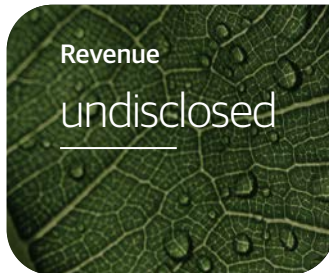
# Lunar Energy



## Mountain View | California

founded 2020  
headcount 270+

ENERGY PRODUCTION



## Management

**Kunal Girotra** | Founder, CEO  
**J Stephen Pollock** | CRO  
**Jeff Barnes** | VP of Finance and Accounting  
**Chris Wright** | SVP Software Tech & Product  
**Mark Rohan** | VP of Operations  
**Grace Hsu** | VP of Legal and HR  
**Marissa Muller** | VP of Marketing & Comms

## Board members

**Kunal Girotra**  
**Mary Powell**  
**Lynn Jurich**  
**Ian Huh**  
**Kyungyeol Song**

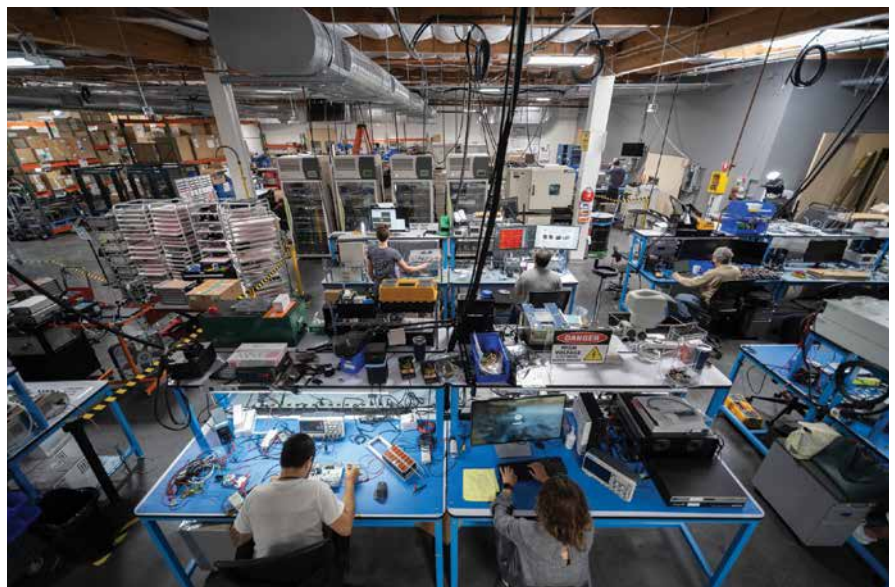
## Funding rounds

2020 | \$150M  
 2022 | \$150M

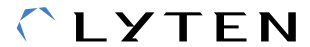
## Key investors

Sunrun  
 SK  
 Itochu  
 Honda

Lunar Energy is on a mission to power homes around the world with endless clean energy, by building an ecosystem of all-electric products. The company offers an all-in-one solar battery system that allows homes to make, use, and store clean power. Lunar Gridshare - an AI-based software platform - connects, optimizes, and dispatches fleets of battery systems, EV chargers, and other devices. Lunar Gridshare manages over 80,000 devices across three continents, with a total energy capacity of almost 800 MWh.



# Lyten



## San Jose | California

founded 2015  
headcount 300

## Management

**Lars Herlitz** | Chairman, Co-Founder || **Dan Cook** | CEO, Co-Founder || **Celina Mikolajczak** | Chief Battery Tech Officer || **Keith Norman** | Chief Sustainability Officer || **Eric Fick** | President, Lyten Federal || **Brian Martin** | EVP, Legal Counsel || **Michael Walters** | Chief HR Officer || **Daniel Jardine** | SVP Sensor Tech || **James Griffin** | VP Composite Tech

## Board members

Zia Huque  
Dan Cook  
Lars Herlitz

MATERIALS



## Funding rounds

Seed (2018) | \$45M  
Series A (2021) | \$165M  
Series B (2023) | \$200M

## Key investors

Prime Mover Labs  
Stellantis  
FedEx  
Honeywell  
Walbridge

Lyten is a material applications company with a mission to deliver breakthrough performance and a path to net zero carbon emissions. Lyten is able to permanently sequester carbon from methane in the form of 3D graphene, and utilize the resulting material to develop decarbonizing applications ranging from weight reduction to high-density energy storage. On the energy storage front, Lyten has demonstrated that its lithium-sulphur cells can be built in standard cylindrical and pouch formats, can be scaled to automated manufacturing, and are able to utilize existing lithium-ion manufacturing infrastructure. Lyten is on track to deliver commercial lithium-sulfur cells for non-automotive applications in 2024/25 and automotive applications in the 2027/28 timeframe.



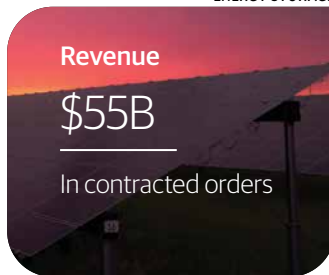
# Northvolt

northvolt®

## Stockholm | Sweden

founded 2016  
headcount 5,250+

### ENERGY STORAGE



## Management

**Peter Carlsson** | Co-Founder, CEO  
**Paolo Cerruti** | Co-Founder, CEO North America  
**Alexander Hartman** | CFO || **Emma Nehrenheim** | Pres., BU Materials || **Barbara Thierart** | Pres., BU Systems || **Patrick Andreasson** | CSO || **Christofer Haux** | CCO, CEO Germany || **Dennis van Schie** | Ch. Supply Chain Off. || **Mark Duchesne** | CEO Ett

## Funding rounds

\$13B in equity and debt raised to date

## Board members

Jim Hagemann Snabe (Chairman)  
Carl-Erik Lagercrantz  
Michael Bruun | Susanna Campbell  
Peter Carlsson  
Barbara Frei-Spreiter  
Tom Johnstone  
Jürgen Rittersberger

## Key investors

Volkswagen Group  
Goldman Sachs

Northvolt is a leading provider of high-performance lithium-ion cells that are based on a proprietary NMC chemistry, dubbed Lingonberry, available in both cylindrical and prismatic formats. With a focus on sustainability, Northvolt operates almost entirely on fossil-free energy and is currently shipping cells out of its first Gigafactory in Sweden. By 2030, NorthVolt expects ~50% of its raw material requirements to be sourced from recycled batteries, reducing both environmental impact as well as cost. Northvolt has secured more than \$55B worth of contracts from key customers, including BMW, Fluence, Scania, Volkswagen, Volvo, and Polestar.



# Omnidian



## Seattle | Washington

founded 2016  
headcount 230

### TECHNOLOGY PLATFORMS

#### Revenue

**\$25-50M**

Near-term target

## Management

**Mark Liffmann** | CEO  
**Minesh Shah** | President  
**Ray Szytko** | CSO  
**Dave Kenny** | COO  
**Brad Davis** | CMO

## Board members

**Mark Liffmann**  
**Abe Yokell**  
**Anna Collins**  
**Eric Meyer**  
**Raj Atluru**  
**Rick Viton**  
**Tom Gross**

## Funding rounds

Seed | \$5.1M  
Series A | \$12M  
Series B | \$40M  
Series B-1 | \$25M

## Key investors

Activate Capital | Avista | Blue Bear Capital  
Centrica | City Light Capital | Congruent Ventures  
Duke Energy | Energy Foundry | Evergy Ventures  
IA Capital Group | National Grid Partners  
WIND Ventures | HSBC Asset Management  
Liberty Mutual | Microsoft

Omnidian's mission is to protect and accelerate investments in clean energy. As a leader in end-to-end asset management for commercial clean energy system developers as well as large residential solar developers, the company has established itself as the leading player in post-installation experience and performance assurance. Built specifically to monitor and maintain solar power systems, Omnidian's asset monitoring platform, diagnostics, and remediation enable value-added operational insights.



# Pano.AI



## San Francisco | California

founded 2019  
headcount 65

## Management

**Sonia Kastne** | CEO  
**Arvind Satyam** | CCO  
**Michael Golub** | VP Finance and Strategy

## Board members

Sonia Kastner  
Kim-Mai Kutler  
Jade Van Doren

### TECHNOLOGY PLATFORMS



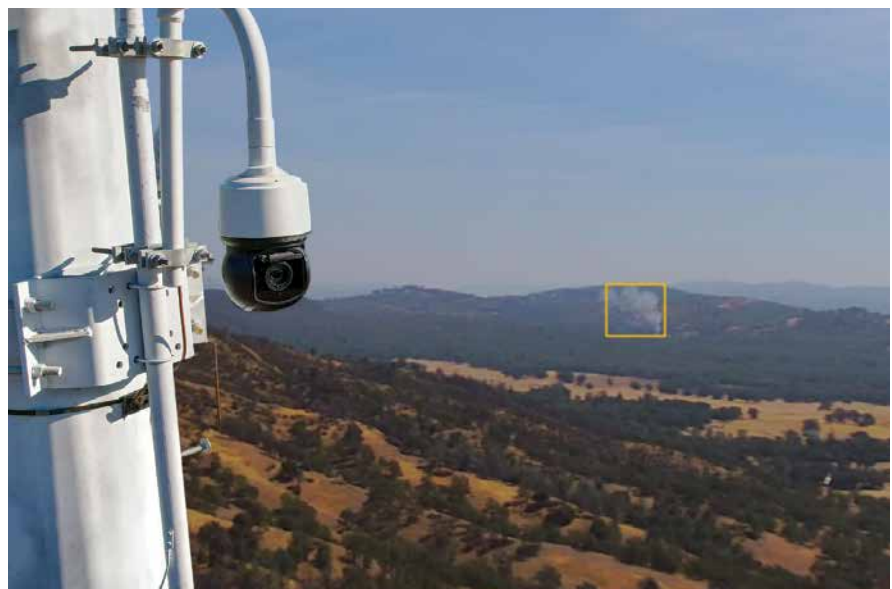
## Funding rounds

Pre-Series A | \$8M  
Series A | \$20M  
Series A Prime | \$17M

## Key investors

Valor Equity Partners  
Salesforce Ventures  
T-Mobile Ventures  
Initialized Capital  
Congruent Ventures  
Convective Capital

Pano Rapid Detect is a connected, intelligent platform for firefighting professionals that helps to detect threats, confirm fires, and disseminate information to responders. The system offers a unified, real-time view of a fire situation by integrating information from ultra-high definition cameras, satellite data, field sensors, legacy cameras, emergency alerts, and various other data feeds. For utilities, private land owners, insurers, and other asset managers, the system provides actionable intelligence when wildfires appear. While initial deployments are focused on addressing wildfires, Pano's technology has additional potential applications in identifying and managing other weather-related and climate events.



# Persefoni



## Tempe | Arizona

founded 2020  
headcount 280

## Management

**Kentaro Kawamori** | Co-Founder, CEO  
**Jason Offerman** | President, Co-Founder, COO  
**Kim Stroh** | Co-Founder, Chief Digital & Information Officer

## Board members

Kentaro Kawamori  
 Jason Offerman  
 Steve Ellis  
 Dan Ahn  
 Greg Lyons  
 Daniel Rice  
 Kyle Derham

## Funding rounds

Series A | \$9.7M  
 Series B | \$101M  
 Series C | \$50M

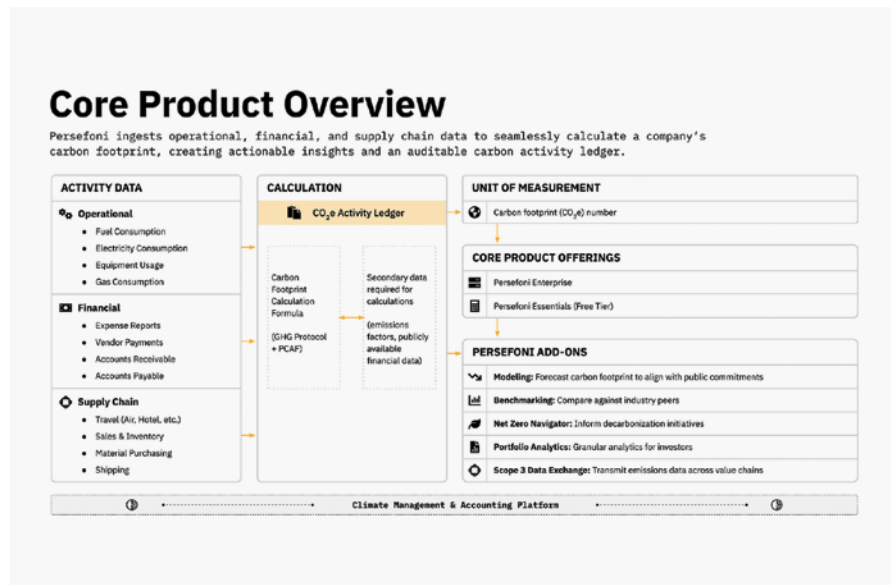
## Key investors

TPG  
 NGP  
 Rice Investment Group  
 Prelude Ventures

CARBON ECONOMY



Persefoni’s SaaS platform enables companies and financial institutions to create regulatory-grade carbon footprint inventories and climate disclosures. The cloud-based platform helps to transform consumption and emission data into action, enabling quantifiable progress toward carbon reduction targets. For investment professionals, Persefoni’s platform is able to help measure the carbon footprint from investing and lending activities in a user-friendly, integrated manner that makes it easy to bring carbon accounting into the investment process.



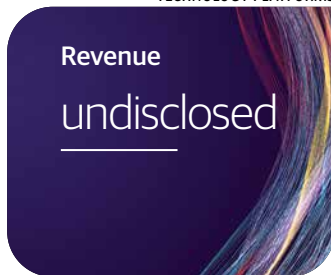
# Power Factors



## San Francisco | California

founded 2013  
headcount 560+

TECHNOLOGY PLATFORMS



## Management

**Julieann Esper Rainville** | CEO  
**Magnus Henriksson** | Chief Customer Officer  
**Abilash Krishnan** | CPO  
**Russ Butler** | CTO  
**Jennifer Edwards** | CMO  
**Matt Kaminski** | Chief Sales Officer  
**Ilan Tordjaman** | CFO

## Board members

Juan Arluce  
Kevin Devlin

## Funding rounds

Not applicable

## Key investors

Not applicable

Power Factors is a SaaS business, offering a renewable energy software platform that manages over 275 GW of wind, solar, hydro and energy storage assets across more than 600 customers and 18K sites. Power Factors' suite of offerings enables the development, engineering, and construction of utility-scale and commercial/industrial scale renewable assets. Asset management and market operations teams get the tools and insights they need to optimize asset performance and maximize revenue at scale.



# Powin Energy



## Portland | Oregon

founded 1989  
headcount 500+

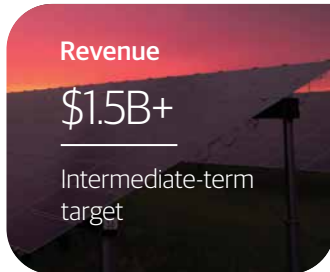
## Management

**Jeff Waters** | CEO  
**Mark Babcock** | CRO || **Ryan Gray** | CFO  
**Kirk Fleischhauer** | COO  
**Michael Bennett** | CTO  
**Rachel Livek** | CHRO  
**Brian Kane** | Chief Projects Officer  
**Chad Paulson** | General Counsel

## Board members

**Geoff Brown**  
**Samuel Graham**  
**Tim Healy**  
**Glenn Jacobson**  
**Danny Lu**  
**Sameer Reddy**

### ENERGY STORAGE



## Funding rounds

2021 | \$100M  
 2022 | \$135M

## Key investors

GIC Private Limited  
 Trilantic North America  
 Samsung Venture Investment  
 Energy Impact Partners

Powin is a global energy storage platform provider for utility-scale projects. Using a fully integrated energy storage solutions ecosystem, spanning StackOS software, system design, delivery, commissioning, and long-term service, Powin optimizes grid performance, facilitating the transition to cleaner energy sources. The company's hardware platforms, Pod and Centipede, set new standards for energy storage solutions, offering higher energy density, safety, reliability and cost efficiency. Powin's proprietary battery management system and energy management controls ensure robust cybersecurity compliance, protecting customers' data, operations, and investments. With a proven track record of over 4 GWh of energy systems deployed and 13 GWh under construction worldwide, Powin is a trusted and established US-based integrator, offering a comprehensive suite of solutions to meet diverse customer requirements.



# Project Canary

PROJECT  
**CANARY**

## Denver | Colorado

founded 2018  
headcount 146

## Management

**Scott Lang** | CEO, Chairman  
**Will Foiles** | Co-Founder, Chief Product  
& Strategy Officer  
**Chris Romer** | Co-Founder

## Board members

Jeffrey Harris  
Max Wolff  
Jane Woodward

CARBON ECONOMY



## Funding rounds

\$125M raised-to-date

## Key investors

Quantum Energy Partners  
Insight Partners  
Brookfield Growth  
Canada Pension Plan Investment Board  
Energy Impact Partners  
Carica Sustainable Investments Frontier VC  
Frontier Venture Capital

Project Canary is a climate technology company offering emission intelligence, which helps energy companies improve and report on their emissions footprints. Project Canary builds high-fidelity sensors, ingests data from various other technologies and sources, and leverages proprietary analytics and models to deliver insights that operators can act on to reduce emissions. The data-driven technology enables energy operators to stop leaks faster, reduce risk, streamline reporting, and differentiate their operations for key stakeholders. In 2022, Project Canary purchased Aeris Technologies, which has developed one of the world's most sensitive laser-based gas analyzer solutions.



# Quaise Energy



Houston | Texas

founded 2018  
headcount 55

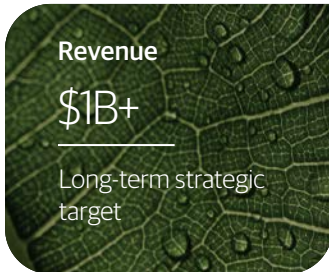
## Management

- Carlos Araque** | CEO, Co-Founder
- Matt Houde** | Co-Founder
- Kevin Bonebrake** | CFO
- Henry Phan** | VP Engineering
- Franck Monmont** | VP Research

## Board members

Undisclosed

### ENERGY PRODUCTION



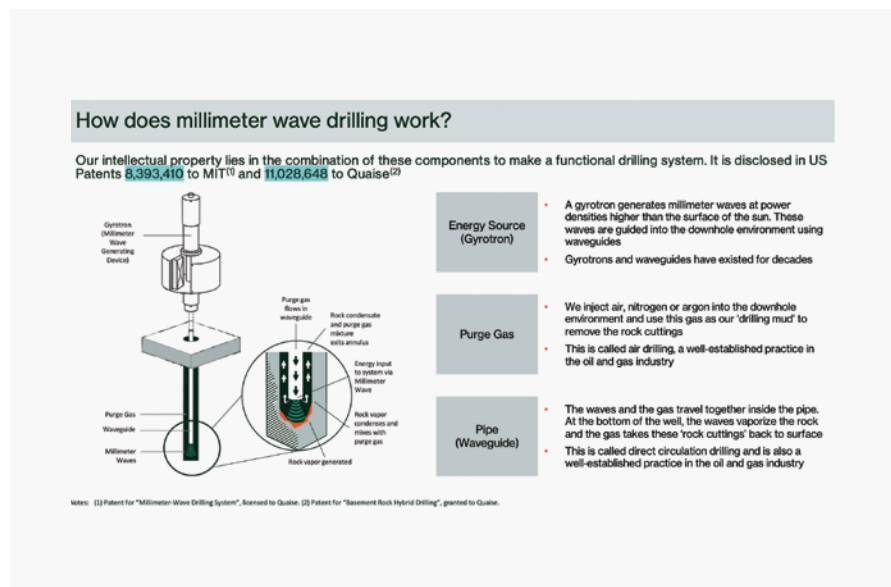
## Funding rounds

\$95M raised to date

## Key investors

- The Engine
- Vinod Khosla
- Nabors Industries
- Prelude
- Safar

Quaise Energy offers a geology-agnostic approach to deep geothermal drilling that is set to accelerate the adoption of renewable energy. By outfitting existing drilling rigs with its millimeter wave technology, Quaise is able to use the industry’s established workforce, assets, supply chains, and regulatory framework. Geothermal energy can potentially use less than 1% of the land and materials required for other intermittent renewable energy sources, significantly reducing the land and power transmission investments needed to decarbonize power generation.



# Raptor Maps



Somerville | Massachusetts

founded 2016  
headcount 74

TECHNOLOGY PLATFORMS

Revenue

undisclosed

## Management

**Nikhil Vadhavkar** | Co-Founder, CEO  
**Eddie Obropta** | Co-Founder, CTO

## Board members

Undisclosed

## Funding rounds

Series A | \$5M  
Series B | \$22M

## Key investors

MacKinnon, Bennett & Co.  
Blue Bear Capital  
Data Point Capital  
Buoyant Ventures  
Congruent Ventures  
Microsoft Climate Innovation Fund

Raptor Maps is a leading climate-focused software company, developing solutions to enable the solar industry to scale operations. Raptor Maps offers an advanced asset health management platform with high-value workflows derived from detailed equipment records, inspection analytics, in-field sensor information, and skilled technician input. The company's software allows solar power plant owners and operators to recover power production losses, optimize operations, and protect financial returns. Raptor Maps has become a leader in delivering the autonomous future of solar power operations, harnessing robotics and AI to address critical challenges in the industry.



# Redaptive

# REDAPTIVE®

## Denver | Colorado

founded 2015  
headcount 300+

## Management

- Arvin Vohra** | Co-Founder, CEO
- John Rhow** | Co-Founder, Exec Chairman / President
- Matt Gembrin** | CFO
- Laura Anger** | Chief People Officer
- Ophir Rahami** | SVP, Operations

## Board members

- Chris Hsu
- Audrey Lee
- Michael Linse
- Connor Luck
- Paul Rainey
- John Rhow
- Arvin Vohra

### TECHNOLOGY PLATFORMS

**Revenue**  
**\$60M+**  
Intermediate-term target

## Funding rounds

Series E | ~\$250M

## Key investors

- CCP Investments
- CBRE
- Linse Capital
- ENGIE New Ventures
- Eergy Ventures
- Honeywell
- Prologis

Redaptive offers a flexible, efficiency-as-a-service program that manages all aspects of a commercial building efficiency upgrade while offering several unique advantages to customers. Redaptive makes the upfront investment in the customer’s facility, assumes all the project execution and technology performance risk, and covers maintenance costs. This allows customers to overcome capital and contractual barriers to saving energy, with the added benefit of Redaptive’s proprietary Data-as-a-Service metering platform. Upgrades can cover various assets, including power generation, HVAC, and LED lighting among others. Redaptive’s approach seeks to align the company’s interests with those of its customers, ensuring that a successful project generates savings for both partners.



# Redwood Materials



## Carson City | Nevada

founded 2017  
headcount ~1,000

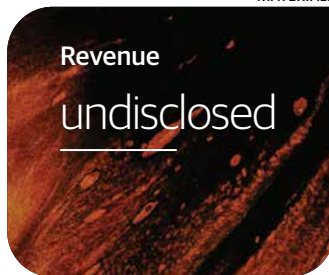
## Management

**JB Straubel** | Founder, CEO  
**Kevin Kassekert** | COO  
**Jason Thompson** | CFO  
**Cal Lankton** | CCO  
**Colin Campbell** | CTO  
**Chris Lister** | Chief Supply Chain Officer

## Board members

Undisclosed

MATERIALS



## Funding rounds

Series B | ~\$40M  
 Series C | \$775M+  
 Series D | \$1,100M  
 2023 | \$2B (Conditional Commitment for a DOE Loan)

## Key investors

T. Rowe Price | Goldman Sachs Asset Management  
 Capricorn's Technology Impact Fund | Baillie Gifford  
 Breakthrough Energy Ventures | Fidelity  
 Ford Motor Company | Franklin Templeton  
 Amazon's Climate Pledge Fund  
 Canada Pension Plan Investment Board  
 Emerson Collective

Redwood is creating a closed-loop supply chain for lithium ion batteries, spanning collection, refurbishment, recycling, refining, and remanufacturing of sustainable battery materials. By recycling lithium-ion batteries and rechargeable devices, Redwood is able to recover ~95% of key battery elements and supply raw materials back to US battery manufacturers. This not only reduces the need for further mining, but lowers the cost and environmental impact of batteries. By 2025, Redwood plans to have 100 GWh of capacity online, equivalent to supplying anodes and cathodes for approximately one million EVs annually. By 2030, Redwood's capacity should be nearing 500 GWh.



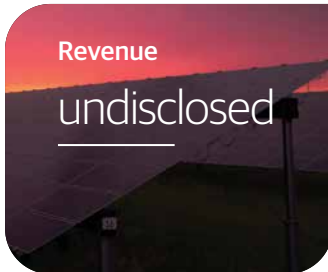
# Rondo



## Alameda | California

founded 2000  
headcount 127

ENERGY STORAGE



### Management

**John O'Donnell** | CEO

**Pete Von Behrens** | CTO

**Eric Trusiewicz** | President, Sr Advisor to the Board

**Lily Guse** | CFO

**Ram Ramanan** | EVP, Engineering

**Karim Ibrik** | EVP, Commercial

**Paul Jones** | Chief Legal Officer

### Board members

**Mark Hartney**

**Sam Bursten**

**Dave Rogers**

### Funding rounds

Series A | \$25M

Strategic Round | \$60M

### Key investors

Microsoft

Breakthrough Energy

Energy Impact Partners

Rio Tinto | Saudi Aramco | SABIC

Siam Cement Group

TITAN Cement Group

SDCL SEEIT

Rondo's heat batteries are constructed from proven, durable materials that are purpose-built for industrial facilities, making for seamless integration with industrial equipment and processes. Thermal radiation warms bricks to temperatures of up to 1,500 degrees Celsius, allowing energy to be stored for hours or days with <1% loss per day. When heat is needed, it is delivered as either superheated air or as superheated steam, carefully monitored to meet the application's temperature and pressure needs. Steam or air is then recycled back through the system to minimize heat loss and maximize efficiency. Each battery is modular, scalable, and capable of delivering megawatts of heat in a quick and cost effective manner.



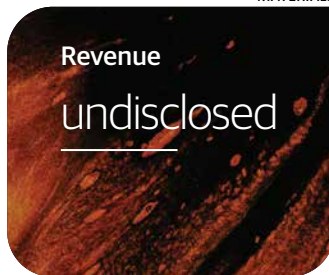
# Sila Nanotechnologies



## Alameda | California

founded 2011  
headcount 395

MATERIALS



## Management

**Gene Berdichevsky** | Co-Founder, CEO  
**Gleb Yushin** | Co-Founder, CTO  
**Abbey Omokhodion** | CFO  
**Alex Jacobs** | Co-Founder, VP, Engineering  
**Kate Martin** | VP, Tech || **Chris Dougher** | VP, Ops  
**Michelle Chang** | VP Strategy & Product  
**Steve Driskill** | VP, Business Affairs

## Board members

Alex Nediger  
 Mike Speiser  
 Andy Verhalen  
 Byron Deeter | Steven Walske  
 Jeffrey Immelt  
 Gleb Yushin  
 Gene Berdichevsky

## Funding rounds

Series A | 2011: \$5M  
 Series B | 2014: \$15M  
 Series C | 2016: \$35M  
 Series D | 2018: \$70M  
 Series E | 2019: \$200M  
 Series F | 2020: \$600M

## Key investors

8VC | Bessemer Venture Partners  
 Canada Pension Plan Investment Board  
 Coatue | Matrix Partners  
 Mercedes-Benz  
 Sutter Hill Ventures  
 T. Rowe Price

Sila is a next-generation battery materials company. Sila's nano-composite silicon anode material, Titan Silicon, was engineered for large scale deployment and delivers industry-leading performance enhancements. Manufactured in the US, the Titan Silicon anode is designed to be a drop-in solution compatible with cylindrical, pouch, and prismatic cells. Customers will have the choice of full or partial graphite replacement based on performance goals and product roadmaps, with both products in the market today. By mid-decade, Sila's materials will also power Mercedes-Benz cars, with the initial rollout planned for the G-Class series.



# SPAN.io

# SPAN<sup>®</sup>

## San Francisco | California

founded 2018  
headcount 382

### TECHNOLOGY PLATFORMS

Revenue

**\$100M+**

Intermediate-term  
target

## Management

**Arch Rao** | Founder, CEO  
**Ryan Harris** | CRO  
**Douglas Booms** | COO  
**Laks Venkatesan** | CFO  
**Joy Lenz** | SVP Engineering  
**Tina Chao** | SVP, Public Policy & Legal

## Board members

**Arch Rao**  
**Dipender Saluja**  
**Murray McCaig**  
**Matt McElhattan**  
**Greg Smithies**  
**Audrey Zibelman**

## Funding rounds

\$231M raised to date

## Key investors

Amazon Alexa Fund | AO PropTech  
 ArcTern Ventures | Capricorn Investment Group  
 Congruent VC | Fifth Wall | FootPrint Coalition  
 HCVC (Hardware Club) | Incite Ventures  
 Qualcomm Ventures | TDK Ventures  
 Ulu Ventures | Wellington Management  
 Wells Fargo Strategic Capital | Wireframe Ventures

SPAN is the leading provider of smart electrical panels that are enabling whole-home electrification. SPAN Panel's intelligent power control manages a home's power for maximum efficiency, so that homeowners can transition to high performance electrical appliances using their existing electrical service. Homeowners are given control and unparalleled energy insights into every circuit and major appliance in the home, and are easily able to navigate how and when to power specific circuits on an ongoing basis. SPAN's technology also helps to extend battery duration during unexpected power outages.



# Svante

# Svante

## Burnaby | British Columbia

founded 2007  
headcount 282

CARBON ECONOMY



## Management

**Claude Létourneau** | President, CEO  
**Matthew Stevenson** | CRO  
**Justine Fisher** | CFO  
**Richard Laliberté** | COO  
**Andrew McLeod** | CCO, General Counsel

## Board members

Steven Berkenfeld  
 Laura Boudreau  
 Dr. Steven Chu  
 Claude Letourneau  
 Roger Strauch  
 Marc van den Berg  
 Damien Vacherot

## Funding rounds

Series A | \$3M  
 Series B | \$20.2M  
 Series C | \$26.2M  
 Series D | \$101.2M  
 Series E | \$318.7M

## Key investors

OCCI  
 Chevron  
 Temasek  
 BDC Capital  
 Carbon Direct

Svante offers companies in carbon-intensive industries such as cement, hydrogen, and pulp/paper a commercially viable way to capture CO<sub>2</sub>, using a solid filter made from nano-materials called structured absorbents. The filters, which are installed in continuous rotary machines, can catch CO<sub>2</sub> from gas streams with very low CO<sub>2</sub> concentrations, and release pure captured CO<sub>2</sub> within 60 seconds. Captured gas can be sequestered or used in industrial processes. Svante's technology offers a cycle time that is measured in minutes rather than hours, which is the case for some competing technologies. The company's solutions also scale easily, and are viable for smaller use cases where other technologies may not be.



# Swell Energy



## Santa Monica | California

founded 2014  
headcount 250

### TECHNOLOGY PLATFORMS

Revenue

**\$70M+**

Near-term target

## Management

**Suleman Khan** | CEO || **Linda Heller** | CFO  
**Stephen Schmidt** | Head of Corp. Dev., GC, Secretary  
**Peter Prakash** | CIO  
**Carl Mansfield** | Head, Commercial Energy Solutions  
**Clinton Davis** | Head, Grid Services  
**Michael Ruehlman** | Head, Consumer Finance  
**Shawn Jacobson** | Head, Project Development

## Board members

Suleman Khan  
 Henry Deng  
 Keith Derman  
 Mike Roth  
 David Kaposi  
 Brendan Bell  
 Benjamin Baker | Stonly Blue

## Funding rounds

\$152M raised to date

## Key investors

SoftBank Vision Fund 2  
 Greenbacker Development Opportunities Fund I, LP  
 Ares Infrastructure Opportunities fund  
 Ontario Power Generation Pension Fund  
 Aligned Climate Capital  
 Third Sphere

Swell is helping homeowners and businesses to achieve total energy security and independence from the grid. Swell provides customers with financing and virtual power plant programs, while partnering with local solar and storage companies to offer a seamless installation process. Swell's network currently represents over 200MWh of dispatchable energy capacity, aggregated through 14K solar and storage systems. Swell's network provides critical grid services while delivering energy resilience to host consumers.



# Terabase



## Berkeley | California

founded 2019  
headcount 127

## Management

**Matt Campbell** | CEO  
**Chris Baker** | COO  
**Mike Kleiman** | CFO  
**Mahesh Morjaria** | EVP, Plant Operational Technology  
**Pierre Gousseland** | SVP, Product

## Board members

Tim Woodward  
Sila Kiliccote  
David Kirkpatrick  
Matt Campbell  
Chris Baker

### TECHNOLOGY PLATFORMS

#### Revenue

**\$20-25M**

Intermediate-term  
target

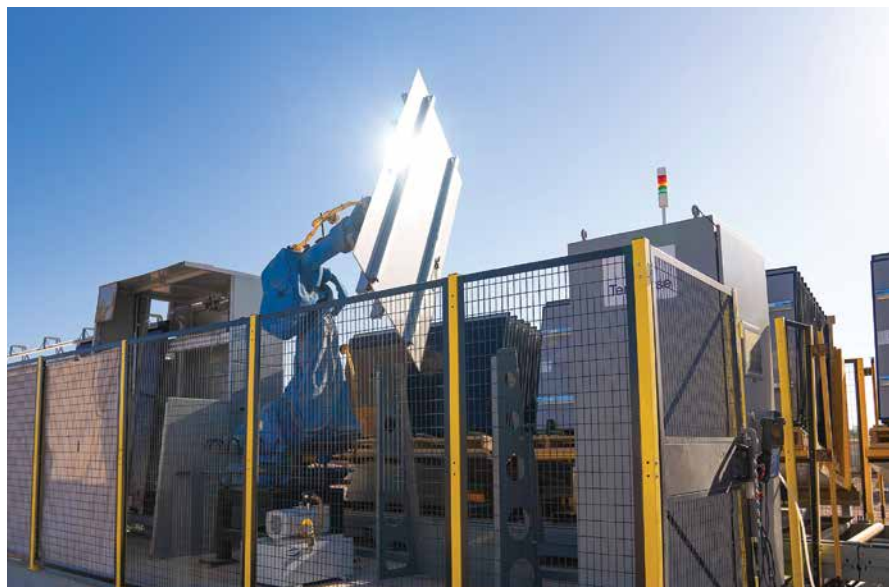
## Funding rounds

Series A | \$6M  
Series B | \$44M

## Key investors

Prelude Ventures  
Breakthrough Energy Ventures  
SJF Ventures  
Fifth Wall

Terabase is the spin-out of the power plant technology group from SunPower (SPWR). The company is on a mission to reduce the cost and increase the scalability of solar by building a digital and automation platform, which supports the development, construction, and operation of utility-scale solar. The platform enables more rapid deployment of solar at more competitive costs, which in turn should enable resource deployment as well as the deployment of new assets such as solar-supported green hydrogen production.



# TeraWatt Infrastructure



## San Francisco | California

founded 2021  
headcount 60

## Management

**Neha Palmer** | Co-Founder, CEO  
**West Owens** | CFO  
**Justin Turner** | CCO  
**Mike Enghard** | Chief Development Officer  
**Tom Jackson** | SVP, Operations

## Board members

Reuben Munger  
 Paul Luce  
 John Rapaport  
 Ben Birnbaum  
 Neha Palmer

TRANSPORT



## Funding rounds

Series A | \$1B

## Key investors

Keyframe Capital  
 Vision Ridge Capital  
 Cyrus Capital Partners

TeraWatt Infrastructure finances, develops, owns, and operates EV charging assets for fleet transportation. Fleet charging sites are deployed in locations ranging from core metro areas to logistics hubs to fully-electrified highway corridors, offering drivers a reliable, reservable charging space. Sites are sourced and developed to provide high-speed charging at scale while prioritizing the economic and operational needs of fleet customers.



# Uplight



## Boulder | Colorado

founded 2019  
headcount 700+

### TECHNOLOGY PLATFORMS

Revenue

**\$100M+**

Intermediate-term  
target

## Management

**Luis D'Acosta** | CEO || **Jesse Demmel** | CTO  
**Indran Ratnathicam** | Chief Strategy Officer  
**Michelle Anastasi** | Chief People Officer  
**Sally Lambert** | SVP, Delivery and Operations  
**Matt Harsha-Strong** | CFO  
**Hannah Bascom** | Chief Market Innovation Officer  
**Shaila Lakhani Ohri** | SVP, GC

## Funding rounds

Not applicable

## Board members

Uplight  
Schneider Electric  
AES  
Coatue

## Key investors

Schneider Electric  
AES  
Coatue  
Huck  
Inclusive Capital Partners  
Rubicon

Uplight's market-leading flexible capacity platform creates compelling engagement opportunities for active customer participation in the clean energy transition. The technology harnesses customers' collective power to create, manage, and monetize energy capacity across various verticals, geographies, and asset types. In February of 2024, Uplight acquired AutoGrid, which enabled expanded product offerings including virtual power plants, large asset management, electric vehicle solutions, rates engagement, distributed energy resource management systems, and energy efficiency. The company has programs spanning 5 continents with a reach of over 110 million homes and businesses in the U.S. alone.



# WeaveGrid



## San Francisco | California

founded 2018  
headcount 83

## Management

**Apoorv Bhargava** | Co-Founder, CEO  
**John Taggart** | Co-Founder, President

## Board members

Apoorv Bhargava  
John Taggart  
Jaimin Rangwala

### TECHNOLOGY PLATFORMS

#### Revenue

**\$5-15M**

Near-term target

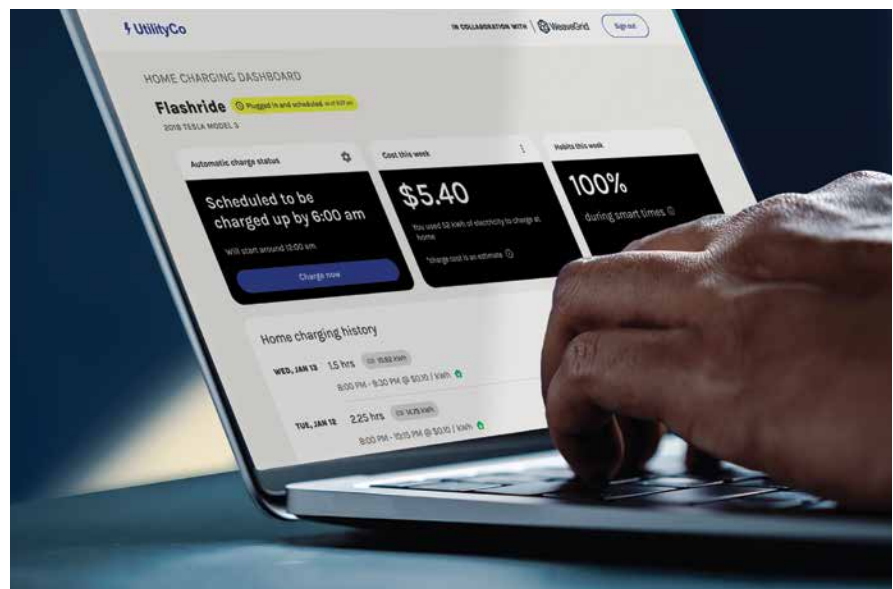
## Funding rounds

Series A | \$15M  
Series B | \$35M

## Key investors

Coatue  
Salesforce Venture  
Breakthrough Energy Ventures  
Activate Capital Partners  
The Westly Group  
Emerson Collective  
Grok Ventured

WeaveGrid is a leading software company that enables the electric grid to support more rapid adoption of electric vehicles. The platform ensures that the grid is able to accommodate incremental EV loads in a safe, affordable, and reliable manner. With WeaveGrid's EV management system, utilities are able to plan, optimize distribution loads, and offer managed charging programs for all EV customers. This allows utilities to identify EV drivers, gather insights on charging patterns, enroll EVs in incentive programs, and encourage beneficial charging habits. EV owners are able to save money while helping to relieve grid stress in a cost-effective manner.



# Xpansiv



## Sydney | Australia

founded 2009  
headcount 300+

CARBON ECONOMY



## Management

**John Melby** | CEO  
**Paul Sestili** | CAO  
**Nathan Rockliff** | CSO  
**Frank McAnally** | CFO  
**Henrik Hasselknippe** | COO  
**Ben Stuart** | CCO || **Seshadri Sundaram** | CTO  
**Erika Crandall** | Chief Risk Officer

## Board members

Larry Liebowitz (Chairman)  
 John Klinck | Joe Madden  
 Chad Bown | Bilal Khan  
 Alex Lue | Dr. Jean Rogers  
 John Melby | Nathan Rockliff  
 Ben Stuart | Will Stewart

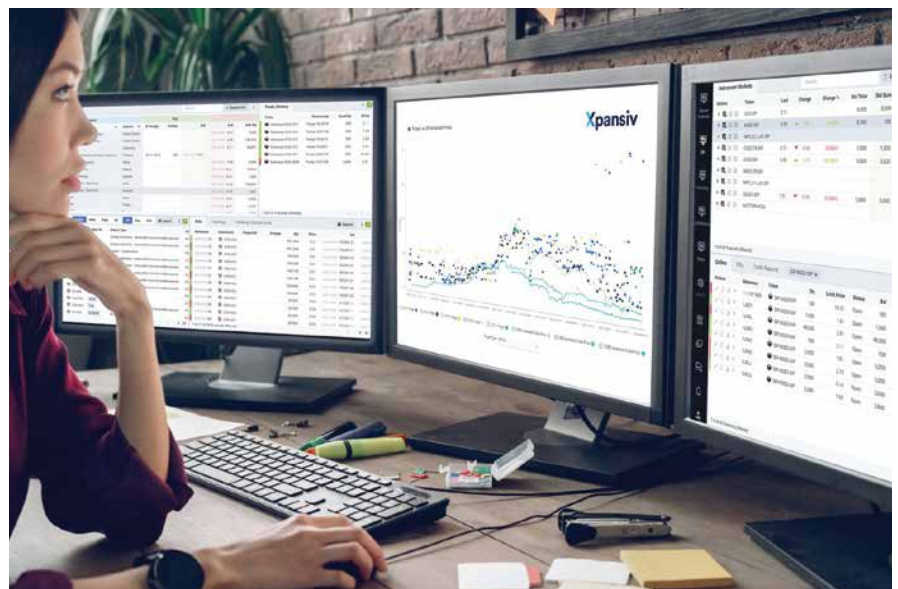
## Funding rounds

\$700M raised to date

## Key investors

Atlas Merchant Capital  
 Aware Super | Bank of America  
 Blackstone | BP Ventures  
 Clean Energy Finance Corporation  
 Commonwealth Bank of Australia  
 Goldman Sachs | Macquarie Bank  
 S&P Global Ventures | Vitruvian Partners

Xpansiv operates a unified market platform designed to accelerate the global energy transition. The company provides thousands of market participants and intermediaries with open access to the widest possible range of reliable environmental commodities, including the world's largest environmental commodities trading platform, where 1 billion assets cross per year. Xpansiv's end-to-end technology platform services the entire lifecycle of environmental commodities, connecting various markets and market participants across the world, enabling stakeholders to deliver transparent and credible environmental claims.



# ZincFive



## Tualatin | Oregon

founded 2016  
headcount 193

ENERGY STORAGE



## Management

**Tim Hysell** | Co-Founder, CEO  
**Tod Higinbotham** | COO  
**Bruce MacLean** | CFO

## Board members

**Bob Powell** (Chairman)  
**Julie Blunden**  
**Jesse Johnson**  
**Ben Sampson**  
**Prescott Logan**  
**Mark Perutz**  
**Tim Hysell**

## Funding rounds

\$175M raised to date

## Key investors

Helios Climate Ventures  
OGCI Climate Investments  
Standard Investments  
Senator Investment Group

ZincFive is the world leader in innovation and delivery of nickel-zinc batteries and immediate power solutions, supported by an impressive portfolio of intellectual property. ZincFive's technology leverages the safety and sustainability of nickel-zinc chemistry to provide unparalleled high power density and performance for mission critical applications. ZincFive has established itself as a leading supplier for data center deployments where reliability and safety are critical, and is beginning to develop additional end markets as well.



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Mr. Osha earned his M.B.A and M.A. in East Asian Area Studies from the University of Michigan and his B.S. in Business Administration from the University of Richmond. He is a CFA® Charterholder.



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Industrial and Energy Technology

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Ms. Cauley is a Vice President and Equity Research Associate covering the Energy Technology and Industrial Technology sectors. She has almost 10 years of relevant experience. Prior to joining Guggenheim, Ms. Cauley was a Research Associate at Ladenburg Thalmann, Wolfe Research, LLC and JMP Securities.

She earned a B.S. in Finance from John Carroll University. Ms. Cauley is a CFA® Charterholder.

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