

CLIMATE

2025

IMPACT

2025

REPORT

DCVC



Deep tech, guided by data and compute, is our best tool for mitigating the effects of climate change and ensuring a future of energy abundance and resilience for everyone.

DCVC is deep tech venture capital.

JAN-DEC 2025

The greenhouse gases released by the combustion of hydrocarbon fuels are still the biggest drivers of global warming. That's obviously the cause of ongoing climate volatility—but for deep tech innovators, it's also an enormous opportunity. And it's the main reason we see climate-tech investing as inextricable from energy investing.

Since DCVC's founding in 2010, alongside our work supporting companies in computing, robotics, industrial transformation, drug development, agriculture, aerospace, and defense, we've been searching out entrepreneurs with promising ideas for simultaneously *decarbonizing the economy and increasing energy abundance*. Those goals aren't mutually exclusive—in fact, we think they're mutually reinforcing. Newcomers in any marketplace succeed by beating incumbents on price or quality, or preferably both; in the energy economy, that means finding ways to produce energy and materials that are cleaner, cheaper,

and more efficient. We see many such ideas emerging, and we believe that with sufficient support, the strongest ones will grow into our main tools for mitigating, adapting to, and eventually reversing climate change.

Our specialty at DCVC has always been finding deep tech companies with defensible ways to use computing and applied AI to solve trillion-dollar problems and helping them to scale up. In 2023 we chartered a dedicated fund to bring those unique skills to bear on a set of energy and climate-tech companies that we believe show extraordinary promise.

We knew from the fund's launch that we wanted to adopt and advance the best practices in climate impact reporting in order to stay accountable to ourselves, our companies, and our limited-partner investors. And that's why we're publishing this third annual DCVC Climate Impact Report. It's designed to show how our companies are growing, how quickly they're advancing toward their climate goals, and how we're living up to our own goals as the stewards of the fund.

We invest around three central themes. The first is simply getting more electrons onto the electrical grid. More energy production and smarter energy management support grid stability and resilience, data center growth, and the electrification of industry and transportation. The second is intelligent production: technologies that boost manufacturing and facilitate reshoring through automation and robotics on the one hand, and through more efficient materials and processes on the other. The third is climate impact, which means both mitigating global warming (by making sure the electrons we add to the grid are clean, for example) and adapting to its inevitable effects.

Within those themes, we look specifically for companies poised to scale: mainly those at roughly the Series B and Series C stage that have already derisked their technologies beyond the laboratory and have evidence of strong commercial traction but need partners who can help them grow to their full commercial potential. Importantly, we're willing to work with pre-revenue companies who have evidence of nascent commercial traction and a strong growth trajectory. Our capital helps close the funding gap for companies crossing from pilot phase to commercialization. And our expertise as deep tech investors helps these companies do the heavy lifting required to get to the next inflection point. Fervo Energy's story shows how this strategy can succeed. We were thrilled to pause for a moment of celebration in May of 2026 when the developer of enhanced geothermal systems raised \$2.2 billion in an oversubscribed initial public offering on the Nasdaq exchange.

In every discipline where DCVC invests, we look for innovators who have battle scars from hands-on industry experience, and who also bring business propositions that are heavy on data, computation, and high-fidelity modeling of the real world. That's what's in our own genes, too. We've each spent our careers as investors looking for entrepreneurs who have 1) built the data flywheels that 2) power the advanced forms of computation that 3) speed up research, discovery, product development, and value creation. We know how to help these kinds of companies across the chasm between prototype and marketable product. And we think the data-centric strategy (that's the D in DCVC, after all) makes just as much sense in energy and climate technology as it does in aerospace or biotechnology.

To make a difference for the planet, energy and climate solutions must reduce carbon emissions and heighten resilience in the face of global warming. That's the magic combination we seek in our portfolio investments. Understood correctly, climate and energy are arenas where we don't have to choose between investing for impact and investing for returns: they are the same bet.

TABLE 1

PATHWAY	COMPANY	TECHNOLOGY	2025 MILESTONES
DECARBONIZATION	Fervo Energy	Enhanced geothermal systems to provide reliable, carbon-free, baseload energy.	Secured \$206 million in additional financing and closed an oversubscribed \$462 million funding round in preparation for 2026 IPO; continued construction of Cape Station project.
	Lunar Energy	Modular batteries and a device-agnostic software platform that aggregates homes into virtual power plants.	Reached 1,185 battery systems and 23.7 MWh of energy storage capacity installed.
	Radiant	Carbon-free nuclear energy using gas-cooled fission microreactors small enough to transport by road, rail, or air.	Secured contracts to build 31 microreactors. Raised \$417 million in Series C2 and Series D funding. Approved by DOE to receive HALEU fuel for industry-first DOME test.
	Twelve	Electrocatalysis technology for making E-Jet SAF (sustainable aviation fuel) and E-Naphtha (feedstock for plastics) from CO ₂ , renewable energy, and water.	Reached mechanical completion of AirPlant One facility in Moses Lake, Washington. Signed new offtake agreements with Autodesk and McKinsey.
	Unspun	Automated 3D apparel weaving to eliminate overproduction and logistics transportation and minimize carbon footprint in the fashion industry.	Launched micro production facility demonstrating full equipment capability and performance to the production standards of major global brands.
	Verdigris	Circuit-level insight into electricity usage in data centers and telecom, industrial, and commercial business, enabling smarter energy management and savings.	Doubled total energy managed from 492 GWh to 990 GWh, and increased building space managed from 17.7 million square feet to 27.8 million square feet.
ENABLING SYSTEMS	Equilibrium Energy	AI-driven software to collect and orchestrate grid data and market forecasts to help owners and utilities get more performance from existing energy assets.	Managed 200 MW of flexible energy assets, up from 140 MW in 2024. Brought 190 MW of renewable energy generation under management. Introduced PowerOS agentic AI platform.
	Mainspring Energy	Fuel-flexible linear generators that provide dispatchable firm or backup power, allowing customers to meet current energy needs while supporting the transition to lower-carbon energy systems.	Surpassed 1 GW generating capacity in late-stage development and/or operation.
RESILIENCE	ZwitterCo	Fouling-resistant zwitterionic membranes for industry and agriculture to affordably filter and recycle industrial wastewater.	Delivered 45 million gallons per day of filtration capacity, far surpassing its target of 18 million gallons. Doubled deployed projects from 60 to 120.

TABLE 2 – ALL FIGURES FROM INCEPTION OF FUND TO DECEMBER 31, 2025, UNLESS OTHERWISE NOTED



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As we approach the fund’s fourth year, the biggest change is in our name: we’re now the DCVC Energy + Climate Fund. As we noted in the Introduction, most of the companies in the fund are in the business of either decarbonizing the economy or reducing the impacts created by two centuries of fossil fuel dominance. But energy on its own—where it’s produced, at what cost, and who has access to it—is so central to U.S. and global prosperity (not just to the climate change story) that we wanted to call it out in the fund’s name.

Consider just two ways in which the climate and energy stories are intertwined. First, the explosion of demand for AI inference by frontier models, which is driving billions of dollars of data center construction spending every month in the United States, is also driving a dramatic increase in electricity demand, at a time when the U.S. energy grid is already under strain from slow siting and permitting processes and epic delays in transmission construction. Generative AI and other forms of advanced computing aren’t just a massive industry unto themselves: they also underpin the work of almost every company in DCVC’s entire portfolio, from decarbonization to drug discovery to defense. If we truly want to see the benefits of this work take hold—including dramatic reductions in greenhouse gas emissions by industry—then figuring out how to provide clean, firm power for hundreds of new data centers is likely a prerequisite. Whichever country wins the energy race may win the AI race, as many tech leaders have warned. The converse may also be true.

Second, as globalization gives way to a more regionalized economy, many countries, including the United States, are working to reindustrialize and rebuild their supply chains. But we aren’t doing that by building back yesterday’s factories; rather, we’re implementing modular, AI-enabled technologies and process and materials innovations that are inherently lower-carbon. And not just because they’re better for the planet, but because they’re often cheaper. Nor do we want to power our new industrial facilities with yesterday’s electrons, or we’ll end up counteracting the emissions reductions they’re enabling. So again, the energy and climate stories are inseparable—and they’re really the same stories we’ve been following since the beginning of our energy and climate strategy.

Little else in our mission has changed. We still seek to close gaps in the climate-tech capital markets between pilot-phase projects and commercialization. In those gaps we find many promising energy and climate-tech companies that have substantially de-risked their technologies but need financial resources and expertise to scale up. We provide smart capital (\$232 million of it as of June 30, 2026) that’s familiar with the challenges of displacing wasteful, polluting incumbent technologies and creating cleaner, more CapEx- and OpEx-efficient alternatives. Alongside that capital and the investor syndicates we assemble, we provide the industry, government, and regulatory expertise companies need in order to light up their first production-scale facilities, transform legacy industries, and create climate impact at scale.

When they do that, they not only create value for investors, but also contribute to the objectives laid out in international social and environmental frameworks, such as improving energy and resource efficiency, avoiding or reducing GHG emissions, conserving land and water, and strengthening climate change resilience and adaptation efforts. It’s our privilege to help our portfolio companies move toward these important goals.



DCVC ENERGY + CLIMATE TEAM

 **ZACHARY BOGUE** is Co-Founder and Managing Partner of DCVC. He brings to bear over 25 years in Silicon Valley as an entrepreneur, venture capitalist, adviser, and angel investor. His investments on behalf of the firm span nuclear energy, agricultural biotech, and applied AI for global-scale climate impact, including areas such as methane abatement and carbon transformation.

The World Economic Forum has named Zack a Young Global Leader in recognition of his leadership at the intersection of transformative technology and urgent global issues. His previous venture investments include Square, AngelList, and Uber. Zack received a bachelor's degree with honors in environmental science and public policy from Harvard University and a JD with honors from Georgetown University's law school.

 **MATTHEW OCKO** is Co-Founder and Managing Partner of DCVC. He has been building tech to advance the security and prosperity of the United States since 1983. His current investments on behalf of the firm range from energy, manufacturing, and agriculture to synthetic biology, robotics, applied AI, and national defense.

Many of Matt's prior investments were in companies that either enjoyed large IPOs or were acquired to become core capabilities of companies like Illumina,

Cisco, Google, IBM, Amazon/AWS, Broadcom/VMware, Salesforce, and Akamai. His venture investments prior to DCVC include Zoom, Fortinet, D-Wave Systems, Uber, AngelList, XenSource, and Facebook. He holds a degree in physics from Yale University, and he is an inventor on over 50 granted or in-process patents in areas as diverse as computer systems virtualization, fraud detection, and AR.

 **DR. RACHEL SLAYBAUGH** is a General Partner at DCVC focused on climate, sustainability, and energy investments.

Before joining DCVC, Rachel was a tenured associate professor of nuclear engineering at the University of California, Berkeley, and also a division director at Lawrence Berkeley National Laboratory, where she ran the Cyclotron Road division, the hard-tech innovation fellowship program. She served as a program director at the

Department of Energy's ARPA-E, where she created the nuclear fission program and managed the agriculture portfolio as well as solar and virtual reality teams. She has a bachelor's degree in nuclear engineering from Pennsylvania State University, where she served as a licensed nuclear reactor operator, and a master's degree and PhD in nuclear engineering and engineering physics from the University of Wisconsin-Madison.

 **MILO WERNER** is a General Partner at DCVC investing in industrial and automation technologies that decarbonize high-emitting industries, with a focus on the commercialization stage where companies prove they can scale, hit cost targets, and deploy at speed.

Her investment background includes partner positions at MIT's The Engine Ventures, Ajax Strategies, and Khosla Ventures. Her operating experience includes many years leading the

New Product Introduction team at Tesla Motors and Fitbit, and she was also a vice president of engineering at Zola Intelligence, solving energy access. She founded The NextGen Industry Group and writes their bi-monthly newsletter, covering companies commercializing advanced manufacturing technologies. She holds a bachelor's degree in engineering from the University of Vermont, and a master's degree in engineering and an MBA from MIT.

 **KRISTEN ROCCA** is a Principal at DCVC focused on climate, energy, and industrial innovation, investing in technologies that reduce emissions, strengthen global resilience, and modernize the foundational industries underpinning the global economy.

Prior to joining DCVC, Kristen was a Principal at Unovis Asset Management in Amsterdam, leading the firm's deep tech investments in synthetic biology, chemistry, and material transformation. She was also a Principal at Atlantic VC in Berlin, leading early-stage deep tech climate and energy

investments. Before investing, Kristen worked across the energy sector in product development for nuclear, utilities, and automotive applications, as well as in corporate sustainability and operations, later moving into operations consulting for global corporations. She was on the founding team at Novameat, a Barcelona-based food system startup, where she led growth strategy and fundraising. Kristen holds a bachelor's degree in chemical engineering from McMaster University, specializing in polymer materials and manufacturing, and an MBA from IESE Business School.

 **GREGG ROTENBERG** is the Go To Market (GTM) Operating Partner at DCVC, where he leads commercial diligence for prospective investments and partners with portfolio company leadership teams to accelerate revenue growth and commercial scale.

Gregg applies sales science and evidence-based GTM strategies to help companies achieve durable commercial growth. Prior to DCVC, Gregg was a serial CEO, leading grid technology company

Smart Wires to an IPO in 2021 and growing Insight M to a successful acquisition with global industrial monitoring company Zeitview. Earlier in his career he ran Chevron's Renewable Power Group, and advised many of the world's leading technology companies on growth strategy and GTM execution while at Keystone Strategy. He earned a bachelor's degree from the Wharton School and an MBA from the Kellogg School of Management.

 **DR. STEPHEN BEATON** is an Entrepreneur in Residence at DCVC and Founder and CEO of Circularity Fuels, a DCVC-backed company transforming waste carbon into valuable hydrocarbons. He draws on a deep expertise in molecular transformation—the chemistry of converting waste feedstocks into high-value chemicals, fuels, and materials.

Prior to joining DCVC, he was a scientist at the National Renewable Energy Laboratory, the Air Force Research Laboratory, and the Pentagon. During his

Air Force career, he stood up the service's synthetic fuel efforts and, as a deployed petroleum laboratory chief, directed fuel quality operations for U.S. forces in the Middle East. He has co-authored papers in journals including *Chemical Science*, *the Journal of the American Chemical Society*, and *Energy & Environmental Science*. Stephen holds a bachelor's degree in biochemistry from the U.S. Air Force Academy, a doctorate from the University of Oxford, and an MBA from Stanford University.

■ DCVC'S CONTRIBUTIONS TO THE CLIMATE INVESTING ECOSYSTEM

ZACHARY BOGUE has long advocated for economically compelling technologies that will reduce greenhouse gas emissions while also buying time for the planet and society to develop long-term, large-scale climate solutions. He leads DCVC's year-round participation in the World Economic Forum, where our partnership showcases deep tech's role in bringing the world greater prosperity, equity, and resilience. A longtime advocate for nuclear energy, he produced the award-winning 2022 Oliver Stone documentary 'Nuclear Now.'

financial architecture—the data, standards, and credit frameworks—that institutional capital needs to underwrite the factories scaling our most important industrial and climate technologies. In partnership with the NextGen Industry Group, ASME is developing manufacturing readiness standards that serve as an independent audit leveraged by financial institutions, much like credit ratings. Together these institutions aim to rewrite how the industry funds the rebuilding of its base with advanced, clean, and affordable technologies.

MATTHEW OCKO is a veteran deep tech investor who believes that large-scale positive societal impact, sustainability, and healthy investment returns can—and must—go hand in hand. He sees the best climate investments as engines of systemic resilience and resource abundance and has driven impact through supporting and advising companies such as Pivot Bio, which helps farmers grow more food, more sustainably while delivering outsized environmental benefits.

KRISTEN ROCCA is a member of the World Economic Forum's Global Future Council on Energy Technology Frontiers, which focuses on accelerating progress on energy systems that are adaptable, inclusive, and forward-looking. She serves on the National Laboratory of the Rockies Investor Advisory Board and supports European Innovation Council initiatives to drive deep tech innovation across the European Union.

DR. RACHEL SLAYBAUGH created Good Energy Collective, a policy research organization building the case for advanced nuclear energy. She also serves on the advisory board of LabStart, which supports entrepreneurs spinning technologies out of America's national laboratories. Dr. Slaybaugh participates in various review activities and independent studies such as Open Minds, and she is a frequent speaker and podcast guest.

GREGG ROTENBERG built up a climate-tech track record in multiple roles, including CEO at Insight M, a leader in high-frequency aerial methane detection, and CEO and president at Smart Wires, a maker of grid-enhancing technologies. Insight M (acquired by Zeitview) was one of the highest climate-impact companies in the world, mitigating over 93 million metric tons of CO₂e in 2025. In 2020 Smart Wires won “Energy Innovation of the Decade” from the World Economic Forum.

MILO WERNER launched the Industrial Capital Initiative with MIT's Laboratory for Financial Engineering and the American Society of Mechanical Engineers (ASME) Climate initiative to build the

DR. STEPHEN BEATON has worked on energy technologies across his time as a United States Air Force officer, research scientist at academic institutions, and clean fuels entrepreneur.

Emerging themes in 2025 In each edition of this Climate Impact Report we like to make note of a few of the trends shaping the markets for innovative energy and climate technologies, and of the ways our portfolio companies are responding. For much more, see DCVC’s 2026 Deep Tech Opportunities Report.

1 Bracing for more energy and supply chain shocks

The conflict in Ukraine beginning in 2022 led to a spike in fuel and fertilizer prices that barely had time to settle down before the Iran conflict and the closure of the Strait of Hormuz destabilized global petroleum and nitrogen markets once again. Meanwhile, saber-rattling over tariff policy in 2024 and 2025 underscored global dependence on China for many critical minerals and other resources. Investing to support energy and resource security has long been a theme at DCVC. Now we’re seeing renewed attention across the investing community to companies such as **Twelve** that are dedicated to rehoming important supply chains and immunizing them against price volatility.

2 Low-carbon reindustrialization and reshoring

This process of global decoupling opens up an opportunity to build advanced energy and manufacturing facilities here in the United States that are designed from the beginning for low-carbon or zero-carbon operations. **Fervo Energy** is tapping the enormous reserves of heat below Earth’s surface to provide a new source of clean, firm power. **Unspun** is selling automated 3D looms that can produce clothing on-demand and closer to consumers, shortening lengthy and carbon-intensive supply chains.

3 Modular, versatile production

Scalable solutions must work in multiple contexts. **Radiant** is building small fission reactors for remote locations where clean solutions often can’t reach; **Mainspring Energy’s** fuel flexibility, firm and backup power capabilities, and 0–100 percent capacity flexibility make it a Swiss army knife for power generation; **Equilibrium Energy’s** software brings all the operating complexities of an energy portfolio under one AI-enabled software suite; **ZwitterCo** continues to develop products that enable wastewater treatment and filtration across a variety of industries.

4 Decarbonizing AI

There’s a long interconnection queue for builders of data centers and other facilities who need grid power. But when data center operators are willing to supplement grid service with local battery storage and on-site power generation from companies such as **Mainspring**, they can settle

for flexible service connections that are much faster and easier for utilities to provision.¹ Meanwhile, **Verdigris** is helping data center operators control costs and find stranded capacity, and **Fervo** is working with Google to provide clean baseload power for future AI infrastructure.

5 Physical AI

Beyond computing’s direct impact on climate technology, physical AI and robotics are transforming the way energy and climate-tech companies innovate. The acceleration of robotics learning means that power electronics systems can now react faster to changing conditions. Agentic trading algorithms like those employed by **Equilibrium Energy** continue to proliferate. **Unspun’s** automated weaving machine came up to production-level performance in a matter of months, not years, as a result of advances in physical AI.

6 Behind-the-meter power generation to stabilize the grid

On-site power generation isn’t just for data centers. **Lunar Energy** is giving owners of solar-equipped homes better ways to store electricity and even feed it to the grid when needed. **Mainspring** and **Radiant** offer commercial, industrial, and government customers the ability to generate and manage their own energy and reduce their reliance on the grid. That energy can often be tapped more quickly, cheaply, or cleanly than would otherwise be possible.

7 Influencing the national conversation

Our companies are actively shaping the economic and political narratives around their industries. **Fervo**, for example, engages policymakers and investors around the benefits of enhanced geothermal systems through high-profile visits, congressional testimony, and thought leadership initiatives, all of which were further highlighted in the run-up to the company’s initial public offering. **Radiant’s** high-profile work with the Department of Energy to prepare for the first-ever full power test of an advanced fission reactor at Idaho National Laboratory’s DOME facility is contributing to the larger resurgence of nuclear energy in the United States.

Planned GHG impact for DCVC Energy + Climate decarbonization pathway companies*

TABLE 3			↓ 10 YEARS AFTER FIRST DCVC INVESTMENT ↓		
COMPANY	BASELINE SOLUTION	UNIT IMPACT	ESTIMATED SCALE	ANNUAL AVOIDED EMISSIONS	CUMULATIVE AVOIDED EMISSIONS
FERVO ENERGY	Local grid (NV/UT)	92.5%	658 MWe capacity contracted	1,200,895 mt CO ₂ e	8,750,580 mt CO ₂ e
LUNAR ENERGY	U.S. grid (evening peak)	83.0%	6,108 MWh installed	91,282 mt CO ₂ e	578,978 mt CO ₂ e
RADIANT	Diesel generators	98.8%	50 microreactors in operation (50 MWe)	198,663 mt CO ₂ e	552,283 mt CO ₂ e
TWELVE	Traditional jet fuel	93.3%	186 million gallons E-Jet, 46 million gallons E-Naphtha	2,208,328 mt CO ₂ e	6,329,810 mt CO ₂ e
UNSPUN	Traditional garment manufacturing	42.9%	105 million garments produced annually	63,000 mt CO ₂ e	220,677 mt CO ₂ e
VERDIGRIS	Traditional building energy management and HVAC systems	20.2%	23,684 GWh energy managed	748,156 mt CO ₂ e	2,632,488 mt CO ₂ e
TOTAL				4,510,323 mt CO ₂ e	19,064,816 mt CO ₂ e

*Estimated scale and unit impact are based on publicly available information, company inputs, and conservative assumptions, and are subject to change. Avoided emissions estimates were developed by DCVC and Tideline using the Project Frame methodology and do not represent portfolio company forecasts, targets, or commitments. Estimated avoided emissions are presented to provide transparency into the potential scale of climate impact across the portfolio and should not be interpreted as impact attributable to DCVC.

Decarbonization Pathway

Decarbonizing power and industrial systems is the key to achieving the world's climate goals. DCVC Energy + Climate companies in the **DECARBONIZATION PATHWAY** are reducing or avoiding greenhouse gas emissions—either directly or through enabling effects—by replacing or optimizing high-emitting processes or products.

Our companies are building climate solutions along the entire power value and consumption chain, from renewable generation to storage, distribution, and end usage. They are changing the way energy is generated (**Fervo Energy, Radiant**) and managed and distributed (**Lunar Energy, Verdigris**), as well as the ways we make the fuels that store it (**Twelve**) and the industrial processes that consume so much of it (**Unspun**).

These solutions can be mutually reinforcing. For example, a data center could purchase baseload geothermal power from **Fervo**, optimize energy efficiency within the facility using equipment from **Verdigris**, and cover the remainder of its energy needs using linear generators from **Mainspring Energy** or by tapping a grid that has lower emissions thanks to **Equilibrium Energy's** optimization software (see the *Enabling Systems pathway*, page 38).

For the companies in the Decarbonization Pathway, we measure and forecast direct effects on emissions using Project Frame's GHG Impact Methodology, and the latest figures are listed at the end of each of the following company profiles. The methodology we use to calculate GHG impact is described in Appendix 2 (page 57).

COMPANIES: **Fervo Energy** **Lunar Energy** **Radiant** **Twelve** **Unspun** **Verdigris**

Delivering 24/7 carbon-free geothermal energy



“By applying its expertise to drill in hot granite rather than oil shale, Fervo can deliver clean, 24/7 baseload power—American innovation at its best.”



Zachary Bogue
Co-Founder and Managing Partner, DCVC



Dr. Rachel Slaybaugh
General Partner, DCVC

Editorial Note: All descriptions of Fervo [Nasdaq: FRVO] in this report are based on publicly available data such as Fervo’s Form S-1 and news reports.

Market & technical challenge

Enormous quantities of heat are generated and stored below the Earth’s surface—potentially enough to provide a steady supply of power to address today’s dramatic load growth. The 3.8 gigawatts of electricity currently supplied by conventional geothermal plants in the United States (according to Rystad, the Norwegian energy research firm) offer only a glimpse of what’s possible.²

The nation needs every new megawatt of clean, renewable energy it can get. Planned new generation isn’t keeping up with anticipated demand, especially from data centers. Rystad projects a 98-gigawatt power shortfall in the U.S. by 2035. Solar and wind power could expand to fill some of the gap, but they only work during certain hours of demand, even when supplemented by battery storage.

Geothermal is a reliable source of 24/7 carbon-free power. The problem with conventional geothermal was that well developers could only access hot rock in a few locations where existing fractures in the rock allowed liquid to flow through to be collected at the surface for power generation. Because such sites are rare, and because the location and extent of natural fractures are unpredictable, there was always a risk that geothermal well drillers would come up dry, and that the power output of completed wells would drop over time.

Solution & impact

Fervo-style enhanced geothermal systems (EGS) get around these old limits using technology from the oil and gas industry. Fervo *engineers* geothermal reservoirs by drilling many horizontal wells in parallel through hot rocks with low or no permeability—then uses hydraulic fracturing to create pathways between the wells, through which brine can flow. In these cracks, brine heats up and returns to the surface, where it heats a secondary fluid that spins an Organic Rankine Cycle turbine. Meanwhile, fiber optic sensing cables gather data on flow rates, pressures, and temperatures across the wellfield, allowing Fervo to model the reservoir and optimize output.

The deeper Fervo drills, the hotter the rock it can reach; the “payzone” reservoir temperature is between 300°F and 625°F. If heat production from the wells declines more quickly than predicted because Fervo chose to run the wells at higher output to make more power, the company can simply drill new wells or infill wells (and at a per-foot drilling cost that decreased by 70 percent between 2022 and 2025). Since commissioning its first commercial pilot plant, Project Red in Nevada, Fervo has observed consistent, stable temperature output, while supplying 3.5 megawatts of power capacity for the grid. At its Cape Station site in Milford, Utah, the company expects to deliver 100 megawatts in early 2027, with 400 additional megawatts to follow. There’s enough underground heat at Cape Station to generate 4.3 gigawatts, if the site were fully built out.

By providing 24/7 clean energy, Fervo reduces the need for fossil-based energy sources such as natural gas, directly avoiding emissions with each kilowatt-hour supplied to customers. The company also estimates that it reduced operational emissions by 3,044 mt CO₂e between August 31, 2024, and August 1, 2025, by switching one of its drilling rigs from diesel generators to utility power—a first for the North American geothermal industry.

FERVO ENERGY

Milestones & future growth

Time magazine named Fervo one of the 100 Most Influential Companies of 2025.

In June of that year, Fervo secured \$206 million of additional capital, including \$100 million in project-level preferred equity, a \$60 million increase in Fervo’s existing corporate term loan facility, and \$45.6 million in additional non-dilutive bridge debt financing. In December the company closed an oversubscribed \$462 million Series E funding round that included DCVC and other new and returning investors, and it secured a \$75 million preferred equity commitment.

In March of 2026, Fervo secured \$421 million in non-recourse project financing for Cape Station; it was the first-ever financing of its kind in the enhanced geothermal systems industry and marked the project’s transition from early stage and bridge funding to a long-term, non-recourse capital structure. Finally, in May 2026, the company completed an oversubscribed, \$2.2 billion IPO on the Nasdaq stock exchange.

Throughout the year, DCVC served as a diligence resource and provided networking opportunities for Fervo. As a member of the board, DCVC General Partner Dr. Rachel Slaybaugh served as the chair of the people and culture committee and helped prepare the company for its public offering. We have been intimately involved in their continued corporate growth plans.

Fervo’s geothermal leases on 595,000 acres of land represent a multitude of multi-gigawatt sites or “GeoClusters.” The company’s ultimate mission is to apply geoscience innovation to accelerate the world’s transition to sustainable energy, by harnessing abundant geothermal power at a competitive cost—which means emphasizing repeatability and scalability.

KEY METRICS

658 MWe

generation capacity contracted under power purchase agreements

Over 25 wells drilled

Fervo’s planned GHG impact

92.5%

emissions intensity improvement vs. local grid in Nevada

94.3%

emissions intensity improvement vs. local grid in Utah

1,200,895 mt

CO₂e annual avoided emissions in 2033

8,750,580 mt

CO₂e cumulative avoided emissions 2023–2033

KEY ASSUMPTIONS

- These impact estimates have been derived by DCVC and Tideline based on publicly available data and the assumptions below. They were not supplied by Fervo.
- The emissions intensity of Fervo’s energy is assumed to be 32 kg CO₂e/MWh based on NREL’s 2017 report “Systematic Review Life Cycle Greenhouse Gas Emissions from Geothermal Electricity.”
- Fervo’s current capacity of 3.5 MW at Project Red is expected to scale to 658 MW total capacity under signed purchase power agreements. This is likely a low estimate for the later years of the analysis.
- Fervo’s geothermal plants are assumed to operate at a 90% capacity factor, based on industry averages reported by the U.S. Department of Energy.³
- Grid emissions intensity at the Project Red site in Nevada is 427kg CO₂e/MWh, which is the baseline through 2025. Starting in 2026, we will use Utah’s grid, where Cape Station is being built, as the baseline scenario. Grid emissions intensity in Utah is currently 563kg CO₂e/MWh. We assume Utah’s grid decarbonizes due to renewable deployment at the same rate as the average U.S. grid, resulting in baseline unit emissions of 263kg CO₂e/MWh in 2033. Baseline emissions data are sourced from the IEA’s State Energy Profiles and Annual Energy Outlook.



LUNAR ENERGY

Making every home into a power plant



Market & technical challenge

Electricity demand is exploding. AI data centers, household electrification, and advanced manufacturing are all pulling on the grid—and it can’t keep up. The slow way to add capacity is to build: new generation and transmission take a decade or more to permit and construct. The fast way is to aggregate and dispatch the flexible power already sitting behind the meter, in people’s homes.

Homeowners installed more than 800 megawatts of battery storage in 2025 alone, up 75 percent over 2024, on top of the millions of homes that had already gone solar.⁴ Coordinated by software, those batteries could behave like one conventional plant: a virtual power plant, or VPP. The U.S. already runs 30–60 gigawatts of VPP capacity, and the Department of Energy estimates that tripling it to 80–160 gigawatts by 2030 would save \$10 billion by avoiding new buildout and idling gas peakers.⁵

The batteries are there. The intelligence to dispatch them is not. Conventional home hardware is one-directional, unable to take a signal back from the grid, so millions of batteries sit idle, unable to deliver capacity when the system needs it most. Whoever supplies the intelligence layer controls the capacity, not just the hardware.

“The grid’s problem isn’t a shortage of power; it’s the speed of adding capacity. A new power plant takes a decade. Lunar turns the batteries already in people’s homes into dispatchable capacity in weeks.”

 **Milo Werner**
General Partner, DCVC

“A million home batteries at 10 kilowatts each is a 10-gigawatt power plant. That’s real city-scale power.”

 **Kunal Girotra**
Founder and CEO, Lunar Energy

Solution & impact

Lunar Energy, which joined DCVC Energy + Climate this year, builds the operating system that turns homes into grid capacity. The vertically integrated Lunar stack includes a modular battery (15–30 kWh), a Bridge that sends power back to the grid on demand, smart breakers, and an AI app that orchestrates the electrified home, including EV charging, heating, and solar. The stacking battery blocks go up fast with a two-person crew, attacking the friction that stalls adoption of home electricity storage industry-wide.

Lunar’s real leverage is Gridshare, a device-agnostic software platform. It manages batteries, EV chargers, and thermostats across more than 100,000 devices on three continents and aggregates them into VPPs. Notably, it does this for other companies’ fleets, not just Lunar’s. Sunrun, the largest U.S. residential solar company, deployed 500 megawatts of distributed power from homes last year; Gridshare orchestrated 150 of them. Through a partnership with ITOCHU, Gridshare will run tens of thousands of home batteries in Japan. Eaton’s AbleEdge smart breakers plug directly into the Lunar Bridge. In short, Lunar sells the picks and shovels of the distributed grid: the layer all retailers, utilities, and hardware brands need.

Lunar reaches the grid operator, utility, and retail energy markets through partners who already hold those relationships, such as Octopus Energy. The aggregated fleets deliver capacity at peak and displace fossil-fuel peakers. “Every home will be a bidirectional grid resource,” Lunar’s Founder and CEO Kunal Girotra says.

For the homeowner, Lunar makes energy legible: the app turns kilowatt-hours into dollars saved. In California, customers saved an average of \$338 in 2025 by running Lunar AI instead of standard self-consumption, and those in Lunar’s VPP earned an average of \$464 on top. When the grid goes down, the home stays on.

The model compounds because the economics work on both sides of the meter. Increasingly, grid value pays for the hardware rather than the homeowner, removing the price barrier that has capped residential adoption. Gridshare is capital-light, recurring, and device-agnostic, so it scales across fleets Lunar didn’t build and earns from capacity Lunar doesn’t own. Because the company manufactures domestically, its systems qualify for the 30 percent Investment Tax Credit plus the 10 percent domestic-content bonus credit. Demand for dispatchable capacity is effectively unbounded, so the binding constraint is deployment speed, which is what an installer-friendly, software-run platform is built to win.

LUNAR ENERGY

Milestones & future growth

In 2025 Lunar grew production past 1,000 homes. It builds domestically, assembling in Suwanee, Georgia and Everett, Washington. The plan, in Girotra’s words, is to “5x production and double it every year.”

The model went mainstream in April 2026, when Octopus Energy launched PowerStore in Texas on Lunar hardware. For no money down and \$45 a month, a homeowner gets a 30-kWh Lunar battery at a 36-month fixed rate of 8 cents per kWh, with the option to own it later. Octopus orchestrates the fleet, charging cheap, discharging at peak, and topping off before storms for backup, so every customer becomes a node in a statewide virtual power plant whose cost is carried by grid value rather than the homeowner. It is the battery-paid-for-by-the-grid playbook, running on Lunar’s platform.

Lunar recently raised \$232 million across its Series C and Series D to scale nationwide; DCVC participated in the Series D, announced in February 2026. We provide board-level support on manufacturing ramp-up, U.S. supply chain, and operating models, plus connections to senior hires, contract manufacturers, and component suppliers.

The centralized grid served America for a century. The next belongs to capacity at the edge: homes that store and dispatch power, coordinated by software, online in weeks instead of the years a new plant takes. By building VPPs one home at a time and running the platform that lets everyone else build them too, Lunar is becoming the operating system the modern grid depends on, and its fastest source of new capacity.

KEY METRICS		
1,185 battery systems installed	23.7 MWh energy storage capacity installed	11.4 MW grid-accessible capacity installed
136,856 devices managed by Lunar software	1,557 mt CO ₂ e avoided in 2025	

Lunar’s planned GHG impact

83.0%
emissions intensity improvement
vs. U.S. evening peak load

91,282 mt
CO₂e annual avoided emissions by 2035

578,978 mt
CO₂e cumulative avoided
emissions 2025–2035



KEY ASSUMPTIONS	
→ Lunar’s installed capacity will reach 6,108 MWh by 2035.	→ The system modeled is a 20 kWh lithium iron phosphate (LFP) battery system, running at 161 annual full cycles per system on average with 95.5% average round trip efficiency. Energy stored in Lunar batteries is assumed to be dispatched at times of peak demand and price. Our analysis only estimates emissions avoided through physical battery operations. Additional avoided emissions, to be modeled in future years, could come from software-mediated reduced curtailment of solar assets.
→ Emissions intensity of energy produced by rooftop solar and stored in Lunar batteries is 87.8 kg CO ₂ e/MWh.	
→ The baseline scenario uses long-run marginal electricity generation in the U.S. for evening peak loads (7–9 p.m.) which is 515 kg CO ₂ e/MWh, as this is the most likely time energy will be dispatched from Lunar systems to homes. The baseline emissions are expected to decrease year-over-year as the grid gets cleaner, dropping to 185 kg CO ₂ e/MWh by 2035, based on Gagnon 2024. ⁶	



RADIANT

Building a portable nuclear microreactor that replaces diesel generators



Market & technical challenge

For the hundreds of remote communities, military installations, and industrial operations that lie beyond the reach of the grid, reliable power has always come at a steep price—and a steep carbon cost. The default solution is the diesel generator: a workhorse technology that is rugged, portable, and available almost anywhere, but which burns through fuel at a punishing rate. (A standard military-grade unit consumes roughly 60 gallons of JP-8 per hour, releasing thousands of metric tons of CO₂ over the course of a year.) And emissions aren’t the only problem. Getting fuel to a remote Alaskan village in winter, or to a remote military base, is a recurring logistics challenge and often a risk to personnel.

An alternative is emerging. A microreactor can use fission to generate continuous, carbon-free power for years without refueling, with no fuel convoys, no emissions, and no dependency on weather or season. The challenge has been engineering a reactor that’s small enough to transport, simple enough to operate without a large on-site staff, and economical enough to compete with diesel.

Solution & impact

Radiant is leveraging its team members’ experience in mechanical engineering and manufacturing at SpaceX, Westinghouse, the Department of Energy, the U.S. Army, and other leading organizations to build a microreactor from first principles, treating it less like a miniaturized power plant and more like a piece of portable hardware. The result is Kaleidos, a 1.2-megawatt reactor whose entire system—core, heat exchanger, generators, and control electronics—fits inside a standard semitrailer, deliverable to any location by road, rail, or air.

At the heart of Kaleidos are small, triple-coated uranium, carbon, and oxygen fuel kernels called TRISO. The kernels retain fission products even under extreme temperature conditions, which eliminates the central safety concern that has historically made nuclear power plants so difficult to site and permit. Heat moves from the core through a circulating helium loop (the helium doesn’t become radioactive, so leaks are far less consequential than in conventional water-cooled designs), and the core itself is passively cooled by an air jacket. No water is required—a significant advantage in the arid or arctic environments where Kaleidos is most likely to be deployed.

Radiant has used extensive computational modeling to compress the development timeline for Kaleidos and reduce the need for costly physical prototypes, an approach borrowed from the aerospace industry. The company is on track to conduct its first fueled test at full power at Idaho National Laboratory’s DOME facility in 2026, and to deliver its first operational reactor in 2028. At scale, Kaleidos’ lifecycle emissions represent a 98.8 percent improvement over diesel generators, translating into 198,663 metric tons of CO₂e avoided by the tenth year of operation and a cumulative avoided emissions of 552,283 metric tons CO₂e over the first 10 years.

RADIANT

Milestones & future growth

Radiant is the only reactor developer tracking toward a full-scale, full-power level reactor in 2026, which has been its target since 2020. By the end of 2025 Radiant had secured contracts to build 31 microreactors. Five of these units are being built through MOUs with IDR, Clarity Tech, and AES. The rest are pre-orders from government and commercial buyers.

In April 2025, in a highly competitive process, the Department of Energy selected Radiant to receive high-assay low-enriched uranium (HALEU) fuel for the first test of the Kaleidos reactor. In July 2025 the DOE designated Radiant as the first company to test its reactor in the DOME (Demonstration of Microreactor Experiments) facility, a test bed purpose-built to accelerate the development of advanced fission reactor technologies. The company was also selected for the DOE’s Reactor Pilot Program, established by executive order in May 2025 to expedite testing of advanced reactor designs. The company also selected Oak Ridge, Tenn., as the location of its first Kaleidos factory.

In February 2025 Radiant raised \$66.5 million in a Series C round led by DCVC, and in December 2025 it raised an additional \$350 million in a Series D (in which DCVC participated). DCVC General Partner Dr. Rachel Slaybaugh is on Radiant’s board and provides connections to nuclear industry experts, investors, banks, lobbyists, and government, as well as expert guidance; she is also on the compensation committee. She supports the company on fundraising and strategy formation and has helped outside organizations perform due diligence on Radiant. DCVC General Partner Milo Werner and Principal Kristen Rocca also provide resources for talent acquisition and factory buildout.

Kaleidos will be the first portable, fully assembled, zero-emissions power source that works anywhere and is transportable by road, rail, or plane. It will provide a clean and resilient energy alternative to fossil fuels for remote applications, reducing reliance on carbon-intense energy sources such as diesel generators.

KEY METRICS	
31 microreactors contracted	Approved to receive HALEU fuel
1 st company to test its reactor at the Idaho National Laboratory DOME	Selected for DOE Reactor Pilot Program

Radiant’s planned GHG impact



98.8%
emissions intensity improvement
vs. diesel generators

198,663 mt
CO₂e annual avoided
emissions by 2034

552,283 mt
CO₂e cumulative avoided
emissions 2024–2034

KEY ASSUMPTIONS	
→ The emissions intensity of Radiant’s energy is based on a publicly available Life Cycle Assessment (LCA) of small modular nuclear reactors, and is assumed to be 8.4 kg CO ₂ e/MWh. ⁷ Note, however, that Radiant’s Kaleidos reactor is a microreactor—not a small modular reactor—and its actual emissions intensity may be even lower than that of an SMR.	→ Radiant will begin deploying reactors in 2028 and will reach 50 reactors deployed by 2034.
→ The baseline scenario used is a diesel generator, which is assumed to have an emissions intensity of 728 kg CO ₂ e/MWh. The emissions intensity improvement, then, is 719 kg CO ₂ e/MWh.	→ Radiant’s microreactors are assumed to operate at an average of 63% capacity.



“Radiant is a leader in the nuclear startup space, designing reactors essential to our prosperity and clean energy future.”



Dr. Rachel Slaybaugh
General Partner, DCVC

TWELVE

The carbon transformation company:
Making products from air, not oil



Market & technical challenge

Aviation will be one of the hardest corners of the global economy to decarbonize, because over long distances, no energy source rivals the energy density of liquid hydrocarbons. At the same time, the carbon-carbon bonds that store so much energy and make hydrocarbons indispensable for air travel make them the backbone of durable goods: strong, light, moldable plastics. We can't easily electrify our way out of these two fundamental applications.

There is, however, plenty of room to rethink where these hydrocarbons come from. Today, they're pulled out of the ground. In principle, they can be assembled instead from carbon dioxide that is already in circulation, in biogenic streams, industrial waste streams, or the atmosphere itself. That's the premise of Power-to-Liquid technology: use renewable electricity to split CO₂ into CO and water into hydrogen. The resulting mixture, called syngas, can be built up into fuels and chemicals that are drop-in replacements for their fossil counterparts.

The hard part isn't the idea: It's doing the core electrochemistry efficiently, reliably, and at industrial scale. The gap between bench chemistry demonstrations and a working plant, producing syngas at a cost that competes with petroleum, is what has kept Power-to-Liquid fuel scarce.

Solution & impact

Twelve, founded in 2015, built its approach around a component called the Leaf, a membrane electrode assembly carrying a novel catalyst that reduces CO₂ and water into syngas, with oxygen as the only meaningful byproduct. The company describes the process as a kind of industrial photosynthesis: CO₂, water, and renewable electricity in; hydrocarbons out. Twelve's syngas becomes the feedstock for its E-Jet sustainable aviation fuel (SAF) and E-Naphtha, a building block for plastics.

Compared to other routes to producing SAF, such as waste gasification or conversion of crop ethanol, the electrochemical Power-to-Liquid path reduces emissions, uses dramatically less land and water, and is not constrained by the supply of agricultural feedstock.

“

In order to meet our company's—and our industry's—ambitious decarbonization goals, we need new technologies like the one Twelve has developed and commercialized.”

Diana Birkitt Rakow
Senior Vice President of Public Affairs and Sustainability, Alaska Airlines

TWELVE

Milestones & future growth

In 2025, Twelve’s central effort was turning its AirPlant One facility in Moses Lake, Washington, from a construction project into an operating facility. The plant reached mechanical completion in 2025 and moved into commissioning—the methodical work of verifying that every system functions together before fuel can flow. Once running, the pilot-scale plant is expected to produce roughly 56,000 gallons per year of E-Jet SAF and 14,000 gallons per year of E-Naphtha.

Offtake agreements for much of that fuel have already been contracted. On top of existing agreements with IAG, Alaska Airlines/Microsoft, BCG, and Shopify, the company signed two new contracts in 2025, to help Autodesk and McKinsey reduce their Scope 3 emissions. Twelve expects that the first Alaska Airlines flight burning E-Jet fuel will take place in H2 2026. Partners are motivated both by voluntary climate commitments and by tightening mandates such as the EU’s ReFuelEU initiative, which requires a 6 percent SAF blend in jet fuel by 2030, rising to 70 percent by 2050.

DCVC led Twelve’s 2018 seed round and its 2022 Series B round and has participated in every subsequent round, supporting the company with customer and investor introductions and communications, talent, and policy strategy.

By decoupling fuel production from biomass constraints and creating a scalable, modular process, Twelve is expanding the potential supply of SAF while maintaining compatibility with existing infrastructure. Over the long term, this approach could materially reduce aviation’s carbon footprint and support the development of a circular carbon economy without requiring fundamental changes to aircraft or fueling systems.

KEY METRICS

2 new client contracts signed in 2025

Mechanical completion of first AirPlant

Twelve’s planned GHG impact



93.3%

emissions intensity improvement vs. conventional jet fuel

5,938,814 mt

CO₂e cumulative avoided emissions 2023–2033 for E-Jet

2,067,273 mt

CO₂e annual avoided emissions in 2033 for E-Jet

390,996 mt

CO₂e cumulative avoided emissions 2023–2033 for E-Naphtha

141,056 mt

CO₂e annual avoided emissions in 2033 for E-Naphtha

KEY ASSUMPTIONS

- The lifecycle emissions of conventional jet fuel are approximately 11.9kg CO₂e per gallon, while Twelve’s E-Jet fuel has a lifecycle emissions value of 0.8kg CO₂e per gallon. Lifecycle emissions analysis of jet fuel, naphtha, E-Jet, and E-Naphtha conducted by Twelve.⁸
- E-Naphtha emissions are cradle-to-grave carbon negative, with a total lifecycle impact of -2.6 kg CO₂e per kg of E-Naphtha, compared to 0.5 kg CO₂ per kg of fossil naphtha. This shifts E-Naphtha production to net carbon-negative and significantly lowers the carbon footprint of products that use naphtha as an input, such as plastics, rubbers, resins, and cleaning agents.
- Beyond AirPlant One, Twelve is acquiring additional assets that are already operational and could immediately start producing SAF. Twelve aims to sell 186 million gallons of E-Jet and 46 million gallons of E-Naphtha in 2033.
- The planned GHG impact totals dropped compared to last year due to reduced expected production volumes in later years, although production in early years is now expected to be greater.

UNSPUN

The future of fashion manufacturing



“Unspun offers a tremendous economic and logistical unlock for the fashion industry by eliminating costly overproduction and radically shortening the supply chain.”



Milo Werner
General Partner, DCVC

Market & technical challenge

The fashion industry suffers from a structural mismatch between what gets manufactured and what people actually buy. Garments are designed, ordered, and made over a year ahead of when they reach a store, usually halfway around the world, which means brands are placing large bets on what shoppers will want long before the shoppers themselves know. When those bets miss, the result is deadstock: Of the 100 billion garments produced globally each year, a tenth to a third are never worn at all, resulting in 92 million tons of landfilled waste. Online shopping compounds the problem, since roughly a fifth of garments bought online get returned due to poor fit.

The industry’s answer to these uncertainties has been to overproduce, which is expensive both in dollars and carbon. Apparel accounts for roughly a gigaton of CO₂e emissions annually—on the order of 2 percent of the global total—thanks to the structure of the supply chain itself: energy-intensive production concentrated in a few regions, long-haul freight to move goods to market, and the waste of making things nobody buys.

Trimming fashion’s carbon footprint, therefore, would mean making fewer of the wrong things and moving them shorter distances. Moving manufacturing closer to the point of sale would allow production to track real orders rather than forecasts. And making garments that fit would cut the returns that drive so much waste. Unfortunately, both have been hard to execute, because conventional apparel manufacturing has been built around cutting and sewing flat pattern pieces, in a multi-step, labor-intensive process that resists automation and rewards enormous production runs in low-cost regions.

Solution & impact

Unspun attacks the problem at the level of how a garment is physically made. Its robotic 3D loom routes thousands of individual yarns into a finished, seamless pair of pants, skipping the cutting and sewing steps and the offcut waste they generate. The process is software-guided, so the robotic weaving machine can be reprogrammed to switch styles without retooling or retraining a line. The machine is compact enough to sit inside an ordinary commercial manufacturing facility, which is the point: it’s designed to live in microfactories closer to where clothes are actually sold.

On-demand, localized production lets brands order what they need rather than forecasting a season in advance, shrinking both deadstock and the emissions from shipping finished goods across oceans. One lifecycle analysis compared Unspun’s 3D woven pants with conventional polyester and cotton pants. Assuming a 100 percent sell-through rate for Unspun’s on-demand garments and a 70 percent sell-through rate for conventional garments, Unspun’s process had a 53 percent lower greenhouse warming potential for cotton garments, and 42 percent lower for polyester.⁹

UNSPUN

Milestones & future growth

In 2025, Unspun substantially retired the core technical risks associated with commercial-scale 3D woven apparel production and transitioned its robotic weaving machine from advanced R&D into deployment-ready hardware. The company achieved its long-term speed target on production hardware, producing real garments and consistently meeting brand quality standards across full-size runs and commercial constructions.

This spring, REI and supply chain partners Bethel Industries, Peckham, and PDS Ltd / GSC Link joined Walmart in signing letters of support for Unspun’s plan to build manufacturing capacity in the U.S., demonstrating broad industry demand for re-shored apparel manufacturing. As it moves toward establishing automated apparel manufacturing hubs, the company is evaluating potential locations, infrastructure requirements, and workforce training programs.

Unspun is enabling the fashion industry—one of the most polluting in the world—to align sustainability and profitability by fundamentally changing how garments are woven and consolidating supply chains into as few steps as possible. The technology also helps to localize production, mitigate overproduction, and eventually produce garments on-demand, bringing the world closer to zero inventory waste.

KEY METRICS		
202 garments sold in 2025	28.3 m³ of water conserved in 2025	5 months to 9 weeks reduction in machine deployment time

Unspun’s planned GHG impact



43–93%

emissions intensity improvement vs. traditional garments

14,700,000 m³

water saved annually in 2034

63,000 mt

CO₂e estimated avoided emissions by 2034

51,491,208 m³

water saved cumulatively, 2024–2034

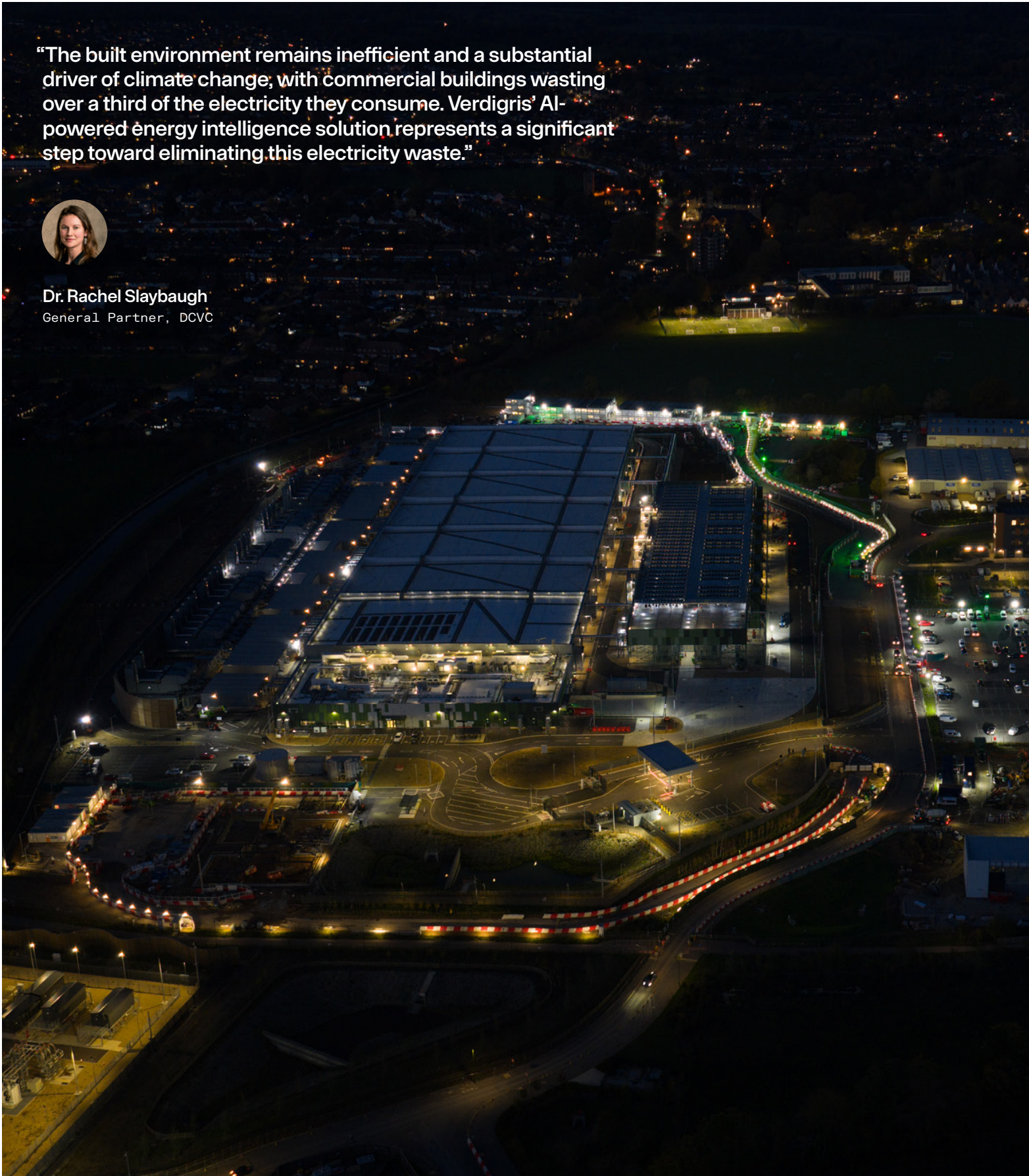
220,677 mt

CO₂e cumulative avoided emissions 2024–2034

KEY ASSUMPTIONS

- Emissions intensity improvement varies depending on the location of production and the energy mix used.
- 20,000 garments produced annually per Unspun machine, increasing to 42,000 annually by 2034. 2,500 machines deployed by 2034.
- 105,000,000 garments produced annually by 2034.
- A Quantis lifecycle analysis of Unspun’s manufacturing technology serves as the basis for unit impact calculations. We used the conservative unit impact of Unspun’s production process, assuming an average global energy mix (as opposed to a scenario where primarily renewable energy is used). Annual and cumulative reduction potentials by 2034 are also estimated using the conservative baseline scenario.
- GHG emissions intensity calculations in the Quantis LCA exclude yarn production, which can be a substantial portion of impact.
- Additional raw material savings from reduced waste in the manufacturing process and from reduced production of garments from on-demand production has not yet been quantified.

Continuous electrical intelligence for AI data centers



“The built environment remains inefficient and a substantial driver of climate change, with commercial buildings wasting over a third of the electricity they consume. Verdigris’ AI-powered energy intelligence solution represents a significant step toward eliminating this electricity waste.”



Dr. Rachel Slaybaugh
General Partner, DCVC

Market & technical challenge

The energy story of the past several years has been dominated by a single, fast-growing consumer: the data center. AI workloads are driving power demand to levels that strain regional grids, with the largest new sites drawing as much electricity as small cities. That foregrounds a question most operators struggle to answer precisely: where, inside a facility, is the power actually going, and how much of the installed capacity is being wasted or stranded? At the scale of modern compute infrastructure, recovering even a slice of this capacity, or catching a failure before it cascades, can be worth millions.

The obstacle is that the instruments most facilities rely on to track electricity flow were never designed to see at the necessary resolution. Conventional power meters and building management systems sample slowly and report averages. That’s fine for billing, but it means owners are blind to the brief, sub-second electrical events that signal a load behaving abnormally or a component beginning to fail. Operators of mission-critical infrastructure need a solution that’s centralized, fast, and quick to install, and that captures the full richness of the electrical signal at the panel, interprets it, and enables decisions about where capacity is hiding and where failure is forming, without rewiring the building.

Solution & impact

Verdigris reads the electrical signal at a resolution legacy instruments can’t match. Its sensors clamp onto selected wires in an existing electrical panel and sample the current up to 8,000 times per second—fast enough that a 200-millisecond harmonic event that looks like noise at conventional sampling rates instead resolves into more than a thousand data points, revealing a specific failure signature. This data flows through a wireless gateway to Verdigris’ cloud, where machine learning models trained on the physics of electrical loads pick out the distinct “fingerprint” of each piece of equipment in the building and track its health. Since 2011 Verdigris has captured this waveform data across tens of thousands of circuits, building one of the largest labeled datasets of real-world electrical behavior. That archive now trains the foundation models behind the platform’s predictions, which is what separates Verdigris from conventional power monitoring.

Because Verdigris uses existing wiring, a deployment that would take days with a conventional metering retrofit can be done in hours, at a fraction of the cost. One Fortune 50 telecom operator deployed Verdigris on more than 1,400 panels across its nationwide portfolio, at sites where electrical distribution diagrams hadn’t been updated regularly. Using measured load data, rather than estimates based on stale drawings, Verdigris discovered that one facility was not operating at full capacity—as the diagrams indicated—but had a megawatt of usable headroom that could be recovered without constructing anything. Finding a megawatt of stranded capacity can translate into \$8–14 million in deferred CapEx—or as much as \$20 million in high-density or AI-optimized facilities. Across the whole portfolio, this operator projects ~\$100 million in total CapEx deferral as capacity is clawed back site by site.

Verdigris turns circuit-level visibility into decision-grade intelligence. It doesn’t simply show operators where their power is going; it tells them where capacity is trapped, which equipment is about to fail, and how to stay within the limits of a strained grid, so they can act before problems become outages or overbuilds. Verdigris has been using responsive energy intelligence to cut waste since 2011, but the infrastructure it now serves has become the defining energy challenge of the decade.

VERDIGRIS

Milestones & future growth

In 2025 Verdigris doubled the amount of energy managed across its customer base, from 492 GWh to 990 GWh, and saved its customers an estimated 200 GWh of energy. The company monitored 27.8 million square feet of building space at 200 to 300 active sites, up from 17.7 million square feet in 2024. Customer sites included about 150 T-Mobile MSO/data center locations as well as enterprise and pilot deployments; the company continues a shift to serving AI-first, GPU-centric, energy-intensive data centers and telecom operators, which now make up 70 to 75 percent of its base (up from 65 percent last year).

Data centers are quickly becoming some of the largest energy consumers in the world. The Verdigris platform, which combines high-fidelity energy data, predictive analytics, and deployment simplicity, will enable data center and telecom operators to optimize their energy usage, thereby saving energy and costs and reducing strain on grids. Verdigris also delivers significant operational, financial, and sustainability impact. Customers benefit from millions in avoided CapEx through capacity recovery and proactive fault detection that can predict failures weeks in advance. Collectively, these outcomes translate into tens of millions in annual cost savings, substantial CO₂ emissions reductions, and improved infrastructure reliability across mission-critical facilities.

KEY METRICS

66,830 mt CO ₂ e emissions avoided in 2025	27.8 million ^{SQ. FT.} of building space monitored	200 GWh energy savings from products sold
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Verdigris' planned GHG impact



20%
average customer energy savings

748,156 mt
CO₂e annual avoided emissions by 2033

2,632,488 mt
CO₂e cumulative avoided emissions 2023–2033

KEY ASSUMPTIONS

- Verdigris' scale of total energy managed is assumed to increase at a rate of 1.25x each year for the next two years, then to continue gaining market share of the U.S. data center market following a typical S-curve, reaching approximately 5 percent of the market, or ~23,700 GWh of energy managed annually.
- Verdigris saves customers an estimated 5–15 percent of energy usage for commercial buildings and 10–30 percent for data centers. Average customer savings is expected to increase over time as the company continues to expand into the data center market.
- The emissions intensity of the energy Verdigris is saving in the baseline scenario is assumed to be the average emissions intensity of the U.S. grid, which is currently 334kg CO₂e/MWh and is expected to decrease over time to 156kg CO₂e/MWh by 2033 (source: EIA).
- Note that due to updated estimates from the EIA's 2026 Annual Energy Outlook (which recognizes that the U.S. grid will get cleaner faster than expected in the 2017 EIA scenario used previously), the annual planned impact in 2033 declined significantly from last year.



Enabling Systems Pathway

Like companies in the Decarbonization Pathway, those in the **ENABLING SYSTEMS PATHWAY** are transforming the energy system, but they're doing it through technological advances that enhance the effectiveness or scale of climate solutions by providing the data, infrastructure, and systems transformation necessary to address and adapt to climate change across the economy. Their work may not directly result in reduced or avoided emissions, but it contributes to a larger vision of a sustainable energy future.

Equilibrium Energy, for example, has assembled and managed grid-scale battery storage facilities that make the batteries more profitable, enhancing the value proposition for batteries, and it has built software that enables energy portfolio managers to better understand their energy assets and manage them more efficiently. **Mainspring Energy** builds fuel-flexible linear generators that help builders of data centers and other facilities avoid long grid interconnection queues without locking themselves into high CapEx, exclusively fossil-fuel-based alternatives.

Logically understood, these indirect effects benefit the development of a more sustainable power industry and more efficient industrial facilities, with the impact measured by the scale of the assets emplaced, operated, or optimized.

COMPANIES: **Equilibrium Energy** **Mainspring Energy**

EQUILIBRIUM ENERGY

The agentic AI platform for power



Market & technical challenge

The grid the United States is building will bear little resemblance to the one it inherited. In the old model, a handful of large, centralized, dispatchable plants served steady, predictable demand. That’s giving way to a far more complex mix of distributed, intermittent resources (solar, wind, and grid-scale batteries), feeding a load that is itself growing quickly and unevenly as data centers, EV charging, and electrified industry come online. Layered on top of that is a changing climate with more frequent extremes of heat, cold, and stormy weather. The result is a system with more moving parts and more volatility than the one utilities are used to managing.

As more clean-energy projects get built, there’s a growing premium on coordination: the ability to extract full value and reliability from a fleet of distributed assets whose behavior changes from hour to hour with weather, demand, and prices. A battery is only as good as the decisions about when to charge and discharge it; a solar farm only pays off if its output is bid into the market at the right times. The obstacle is that the data needed to make these decisions sits in fragmented, disconnected systems that were never designed to interconnect. Closing that gap—building a unified, real-time picture of how physical assets, markets, and operations actually interact—is the prerequisite for running a low-carbon grid that is both efficient and reliable.

Solution & impact

Equilibrium Energy was founded on the premise that future power infrastructure will be defined less by who owns the assets and more by who can orchestrate them intelligently. Building that orchestration capability meant unifying disparate data sources, developing AI-driven forecasts for every hour of the day, and modeling the real-time dynamics of wholesale power markets. The company proved its capabilities by operating grid-scale battery assets and directly competing in live markets. Its assets in Texas performed at the top of their class.

Having demonstrated direct grid-level impact through its asset management, trading, and hedging businesses, the company focused in 2025 on developing PowerOS and Mission Control, an enterprise-grade software platform that uses AI to help power companies deploy and operate their assets. “Unless power companies confront their fragmented technology foundations, they will fail to realize AI’s potential,” wrote Equilibrium’s Co-Founder and CEO, Ryan Hanley. To build PowerOS, he explained, the company “brought together power experts, AI scientists, and engineers, united by one goal: to design an ideal solution that is fueled, but not constrained, by existing data and systems...to imagine the best possible version of a power technology stack in the age of agentic AI if we could start with a completely blank slate.”¹⁰

“As the power grid becomes more volatile in the face of climate change, we expect a new class of power companies [like Equilibrium] will be necessary to maintain reliability and support society’s march toward net zero.”



Dr. Rachel Slaybaugh
General Partner, DCVC

EQUILIBRIUM ENERGY

Milestones & future growth

In 2025 Equilibrium managed 200 megawatts of flexible energy assets, up from 140 megawatts in 2024. It also brought 190 megawatts of renewable energy generation under management, up from zero the year before. Through a solar partnership with a large food company, it delivered more than 340,000 megawatt-hours of renewable energy and contributed to avoiding roughly 192,000 metric tons of CO₂e emissions.

Operating real assets in real markets generated something beyond revenue and avoided emissions: a deep, hard-won understanding of exactly where the industry’s coordination tools fall short. In 2025 the company introduced its agentic AI platform PowerOS, together with a framework it calls Connective Intelligence—a context layer that links the previously siloed data, systems, and expertise inside an enterprise into a single, AI-ready foundation. The platform creates a shared picture across trading, operations, and risk, so that operators can simulate scenarios, optimize portfolios, and anticipate and respond to variability (like wind/solar intermittency or price swings) with greater speed and precision. That translates into higher utilization of clean energy assets and more efficient dispatch—wringing more energy from the same buildout and reducing the need for carbon-intensive backup power solutions such as peaker plants.

In March of 2026, Equilibrium announced its first public partnership to deploy PowerOS with NRG Energy, a Fortune 500 energy company headquartered in Houston, Texas. Having learned how to coordinate clean assets profitably by doing it firsthand, Equilibrium can now drive climate impact by giving predictive capabilities to the operators who run a large share of the grid. Instead of stabilizing the grid after imbalances occur, they can continuously optimize ahead of them. Greater ability to manage complexity allows a low-carbon grid to scale without sacrificing reliability.

KEY METRICS

200 MW
total flexible
assets under
management

190 MW
of renewable
assets under
management

192,325 mt
CO₂e emissions
avoided
(enabled through solar energy
management)

KEY ASSUMPTIONS

→ Equilibrium’s CO₂e emissions avoided are based on EPA Avoided Emission Rates for utility-scale solar in Texas.¹¹



MAINSRING ENERGY

Delivering local power to capacity-constrained companies and communities

MAINSRING’S LINEAR GENERATOR

The device compresses air and gaseous fuel in the central chamber (top) until a non-combustion reaction occurs, driving oscillators outward through copper coils (bottom) and generating electricity.



Market & technical challenge

Surging energy demand means utilities are already struggling to meet peak loads. New customers, including data centers and commercial and industrial customers, face multi-year wait times for grid connections, and are constrained in the amount of power they can pull from the grid. In the absence of flexible, low-carbon systems to bridge these energy gaps, industries and utilities often turn to fossil fuel-based internal combustion generators and gas turbines. Unfortunately, these solutions undermine decarbonization efforts and involve high CapEx and long lifecycles: once purchased, a gas turbine could be running for 25+ years. And they’re rarely good at supplying both firm and backup power, whereas most energy consumers need both.

Solution & impact

Mainspring Energy’s fuel-flexible linear generators provide dispatchable power that bridges grid constraints. Each about the size of a parking space, the generators work by compressing fuel between a pair of air-cushioned oscillators until a flameless reaction drives them back apart; as the oscillators move past copper coils 13 times per second, electricity is generated. Advanced power electronics allow them to operate on a range of fuels—including natural gas, biogas, hydrogen, and ammonia—with software automatically compensating for changes in energy density. The modular units are built to supply hundreds of kilowatts to hundreds of megawatts of on-site firm and backup power, enabling customers to deploy energy-intensive infrastructure despite interconnection delays and capacity constraints. Utilities can also use them to support peak demand needs.

Unlike traditional energy assets optimized for either baseload or backup, Mainspring’s generators serve dual roles, reducing the need for multiple systems. They complement and support deployment of intermittent renewable sources like wind and solar, reducing reliance on diesel backup systems and fossil-based peaker plants while enhancing grid reliability and resilience. They’re also aligned with the energy transition: customers can reduce emissions today (for example, by displacing diesel with natural gas, hydrogen, or ammonia utilization), while maintaining a pathway to lower-carbon fuels over time with no additional CapEx. And due to the higher efficiency of linear generators, they’re more emissions-friendly than other generators when using natural gas. Their modular design, with each individual generator supplying 250 kilowatts, means they can be scaled up rapidly across commercial & industrial, utility, and microgrid applications, while their competitive LCOE provides a viable economic alternative to traditional generators, turbines, and fuel cells, without the same degree of long-term carbon lock-in.

“Mainspring has solved a critical problem: how to build power infrastructure today that won’t lock us into fossil fuels tomorrow.”



Milo Werner
General Partner, DCVC

MAINSRING ENERGY

Outcomes

Mainspring’s technology supports the transition to a more flexible, resilient, and decarbonized energy system by enabling distributed, dispatchable power that helps overcome grid constraints and accelerates electrification. Over the long term, this contributes to:

- **Faster deployment of electrified infrastructure** such as data centers, industrial loads, and EV charging by reducing dependence on grid interconnection timelines and capacity constraints
- **Higher penetration of renewable energy** by providing flexible capacity that balances intermittency and reduces reliance on high-emissions backup and peaker generation
- **Reduced reliance on long-lived, carbon-intensive infrastructure**, avoiding lock-in from diesel generators and conventional gas turbines
- **Improved local air quality** particularly in distributed and grid-constrained environments through drastically reduced NOx emissions
- **Transition toward lower-carbon fuels over time**, as customers adopt increasing shares of biogas, hydrogen/ammonia, and other low-carbon fuels

In 2025, customers continued to turn to Mainspring to meet their power supply needs. The Lathrop Irrigation District in California, for example, installed 10 Mainspring generators with rooftop solar as part of a promise to deliver power to customers for 40 percent below PG&E’s prices.¹² Long Island-based National Grid Ventures announced that it will install a 100 percent hydrogen-fueled Mainspring generator for testing as a supplement to other sources during periods of peak demand.¹³

Mainspring’s climate impact

Mainspring is a new member of DCVC Energy + Climate. To track its progress toward its goals, DCVC will monitor key performance indicators going forward, such as:

- **Avoided emissions** in applications where there is a high-confidence baseline or counterfactual—for example, for biogas utilization and diesel displacement.
- **Megawatts of generation capacity deployed and gigawatt-hours of electricity generated** across Mainspring’s installed base.
- **Fuel mix percentage** across natural gas, biogas, hydrogen/ammonia, and other fuels.
- **Customer and deployment mix**, including firm and backup power for commercial & industrial and data centers, utility applications, and biogas utilization.

KEY METRICS

> 1 GW

generating capacity in late-stage development and/or operation

15–25%

emissions intensity improvement over traditional natural gas reciprocating engines

0–100%

dispatchability
(grid-independent or grid-parallel)

40–50%

emissions intensity improvement over diesel engines when using natural gas

46%

fuel efficiency across all deployment sizes and < 1.5 ppm NOx emissions

Near 100%

emissions intensity improvement when using biogas or green hydrogen



Resilience Pathway

Investments in **RESILIENCE PATHWAY** companies improve the strength and flexibility of the energy and industrial ecosystem by reducing the impact of existing climate-related challenges.

Shortages of fresh water are one such challenge. There is enough fresh water on Earth to meet all conceivable demand—the problem is getting it to where it's needed economically and compensating for the stresses that climate volatility places on existing water infrastructure. Reducing freshwater usage through techniques such as improved wastewater treatment and recycling is one of the key conservation strategies all industrialized economies will need to adopt, and DCVC Energy + Climate is helping through its investment in **ZwitterCo**.

COMPANY: **ZwitterCo**

Breakthrough membrane chemistry that overcomes the limits of traditional water filtration



Market & technical challenge

Supplies of fresh water, like supplies of electricity, are becoming one of the hardest constraints on economic activity. Across much of the United States and the rest of the world, water demand now runs ahead of what’s readily available, and the industries that depend on it—food and beverage, agriculture, pharmaceuticals, power, data centers, and many more—are increasingly exposed to high water costs and tightening regulations, as well as pressure from companies to prove that they are good stewards of a scarce resource.

The obvious answer is to use the same water more than once—to treat industrial wastewater on site and feed it back into the process rather than discharging it. The catch is that filtration membranes, the standard tool for cleaning water, clog quickly. Engineers call it fouling. Organic matter—fats, oils, grease, proteins—accumulates on and inside the membranes, forcing operators to take them out of service for frequent, harsh chemical cleanings that degrade the membranes and consume water and energy. For the dirtiest, most organic-rich streams—exactly the ones that industries would most like to recycle—conventional membranes foul so fast that treatment is simply uneconomic. The result is that vast quantities of usable water are dumped, because the filters that could recover it would cost more to maintain than they’re worth.

Change the economics of keeping a membrane working and a large class of water that was previously written off becomes a recoverable resource.

Solution & impact

ZwitterCo makes membranes built from zwitterionic copolymers. The molecules in these materials carry equal numbers of positive and negative charges, which means they can hold a thin boundary layer of water against their surfaces—preventing contaminants like fats, oils, proteins, and others from getting a lasting grip. The payoff is dramatic: zwitterionic membranes can treat water carrying up to 10,000 times more organic matter than was previously workable, and customers typically cut their cleaning frequency and intensity by 50 to 80 percent. Wastewater that used to be hauled off or discharged turns into a stream that facilities can clean and reuse on site.

“ZwitterCo’s groundbreaking membrane technology unlocks the vast potential of unconventional water sources.”



Jason Pontin
General Partner, DCVC



Earl Jones
Operating Partner, DCVC

Milestones & future growth

For ZwitterCo, the story of 2025 was scale. Over the course of the year the company delivered roughly 45 million gallons per day of filtration capacity—well more than double its target of 18 million gallons per day. The number of deployed projects doubled overall, going from 60 to 120.

Much of that growth came from a deliberate shift in product mix toward retrofits of existing reverse osmosis systems, the workhorses of industrial water treatment. Bringing fouling resistance to the RO market meaningfully raised both the installed capacity delivered and the average water productivity of the products ZwitterCo shipped. In parallel, the company developed three new food-contact-compliant products for the dairy sector, allowing it to demonstrate water- and chemical-use reductions of 50 percent or more across a range of dairy processing applications.

ZwitterCo has proved that its filters work in the hardest niche streams; it’s now graduating to becoming a standard option across mainstream industrial water treatment. By making anti-fouling membranes, it expands the set of water resources that can be recovered economically, and every gallon recovered on site is a gallon not drawn from a stressed aquifer, river, or municipal supply.

KEY METRICS

45 million ^{GAL/DAY}
filtration capacity
delivered in 2025
(up from 10 million gal/day in 2024)

120 projects in place
(up from 60 in 2024)



Advances in science and engineering hinge on an honest understanding of physical possibilities, limitations, and accomplishments, and *data* is what enables that understanding. We hope this summary of the quantitative and qualitative progress of DCVC Energy + Climate portfolio companies in 2025 demonstrates that they have powerful, proven ideas for changing the world, and that they're making exciting progress toward their goals.

The cumulative 10-year avoided emissions projected by DCVC across our decarbonization pathway investments—19,064,816 metric tons of CO₂e—should be one of the measures inspiring optimism. Lowering emissions that much is equivalent to taking about 5 average coal plants offline for a year, or canceling out the emissions of 2.2 million U.S. homes for a year, or not burning 2.1 billion gallons of gasoline.¹⁴ It's nothing close to a full solution to global warming, but it's a remarkable beginning.

And it *is* only the beginning, because the DCVC Energy + Climate portfolio will keep growing, and because some of our companies may advance even faster than projected. (The assumptions in this report are conservative, and could naturally shift in either direction.) We place our deepest faith in the founders we back: the reactor engineers, membrane chemists, and drillers bending metal in the field. They're the people dedicating their careers to the idea that, through innovation, we can fix what ails the old hydrocarbon-based economy—and build a clean, stable, abundant future.



APPENDIX 1

Climate impact management system

Well before we began fundraising for DCVC Energy + Climate or making investments from the fund, we set out to define a unique impact thesis (*described on page 7*) that would shape our investment strategy and differentiate the fund from the broader impact investing market. We also created an impact assessment framework that would guide us in evaluating, quantifying, measuring, and reporting on the progress and effectiveness of the companies we back and the climate solutions they’re developing.

The outcomes we seek—in addition to profits for our limited partners—are directly measurable in terms of variables such as greenhouse gas emissions avoided or reduced, water and land conserved or sustainably managed, and adaptive solutions implemented. A focus on impact is integrated throughout our investment process—we source, screen, and invest in companies that align with our impact thesis and assessment framework.

Once we’ve invested in a company, we continuously assess the changes our capital and expertise are bringing about. We look for those changes in one of three categories or pathways: Decarbonization (*page 12*), Enabling Systems (*page 38*), and Resilience (*page 48*). We gather and track impact indicators at the company level, the pathway level, and the fund level, aligning with industry frameworks such as IRIS+ where possible to increase comparability and transparency. This enables consistent accounting of portfolio performance internally within DCVC, externally for our limited-partner investors, and publicly through reports like this one.

Beginning in 2023 we partnered with Tideline, a leading global impact investing consultancy, to create an impact management system for DCVC Energy + Climate, and Tideline continues to support DCVC’s annual effort to gather standardized impact data and qualitative progress reports. First, they meet with the companies to align on the appropriate data to track and set targets for scale and impact, as well as to discuss key updates to each company’s business, strategy, and impact. The Tideline team then supports companies through the annual data collection process. They update data collection templates and engage in follow-up conversations and reviews to ensure accurate reporting and transparency in methodology and assumptions for calculating impacts, and they consult with us closely all the way through publication of this annual Climate Impact Report.

Our data collection and impact monitoring practices are aligned with (and to a large extent drawn from) the Operating Principles for Impact Management (OPIM), a framework of best practices for impact investors developed by the International Finance Corporation of the World Bank. To build our impact management system, we also drew from standards and frameworks such as the Impact Management Project (IMP), IRIS+, the United Nations Sustainable Development Goals, Project Frame, and the Venture Climate Alliance’s Climate Solutions Framework.

APPENDIX 2

Forward-looking avoided emissions methodology

By design, we invest our capital at DCVC Energy + Climate in companies that are just beginning to scale up their climate solutions. This means that the bulk of the impact of these solutions lies in the future. It’s important for us to quantify that potential impact and how it might change over time, since this not only helps us allocate our capital wisely, but also allows us to track whether our portfolio companies are progressing toward their goals.

Specifically, Tideline and DCVC use the forward-looking GHG impact methodology defined by Project Frame, an effort organized by the nonprofit Prime Coalition to demystify climate investing and standardize emissions impact measurement and management. Our analysis focuses on quantifying each company’s *planned impact*—the emissions it expects will be avoided as a result of its products or services over a 10-year period (with year zero being the year of DCVC’s investment)—using expected commercial volumes, and comparing that to a baseline scenario in which the company does not exist. For 2025 we calculated planned GHG impact for all of the companies in the decarbonization pathway, meaning six of the nine companies in our portfolio.

Let’s walk through the process step by step, using as an example Twelve, the maker of E-Jet sustainable aviation fuel (SAF). Twelve also makes E-Naphtha, a non-fossil feedstock for plastics, but in this example we will consider E-Jet only.

- 1 The first step in quantifying planned GHG impact is to find the emissions intensity or unit emissions for the solution and the baseline, in terms of the quantity of carbon dioxide or carbon-dioxide equivalent emitted per unit of product—in this case, per gallon. Twelve estimates E-Jet lifecycle emissions at 0.8kg CO₂e/gallon, compared to 11.9 kg CO₂e/gallon for conventional fossil-based jet fuel.¹⁵
- 2 The next step is to subtract the solution’s unit emissions from the baseline’s unit emissions. The difference is called the net unit impact. In the case of Twelve’s E-Jet vs. fossil jet fuel, the unit impact is (11.9-0.8)=11.1 kg CO₂e/gallon.
- 3 The third step is to estimate the scale or expected commercial volume the company could realistically achieve given the boundaries of their technologies and target markets. Twelve expects to produce 7,267,680 gallons of E-Jet in 2026, growing to 186,240,768 gallons in 2033.
- 4 The final step is to multiply the net unit impact by the commercial volume, to obtain the planned GHG impact. For Twelve in 2026, this number was calculated as (11.1*7,267,680)/1000=80,671 metric tons of CO₂e avoided, growing to 2,067,273 mt CO₂e in 2033, for a cumulative total in 2023–2033 of 5,938,814 mt CO₂e. (Production of E-Naphtha adds another 390,996 mt CO₂e for a grand total of 6,329,810 mt CO₂e.)

Just as DCVC pushes boundaries by supporting game-changing companies, we hope to advance the state of climate impact reporting in the investing world through sharing of our avoided emissions calculations.

It’s important to note that the climate-tech companies DCVC funds are, almost by definition, developing emerging, often breakthrough technologies that are only beginning to reach their intended commercial markets. The planned impact estimates and other forward-looking data we share here (not backward-looking realized impact data) are projections only. The quantities that go into our calculations, such as expected commercial volumes, are based on conservative assumptions. But they’re still subject to change in future impact reports as companies learn more about the markets in which they operate and the strengths and limitations of their technologies and as baseline scenarios change. The core commitment in all of our impact reporting is to share this information with candor, transparency, and consistency. We intend to calculate realized impact for each company annually to ensure accurate reporting to LPs and to improve the accuracy of our forward-looking calculations and continue to give our LPs an empirically grounded view of our portfolio’s trajectory.

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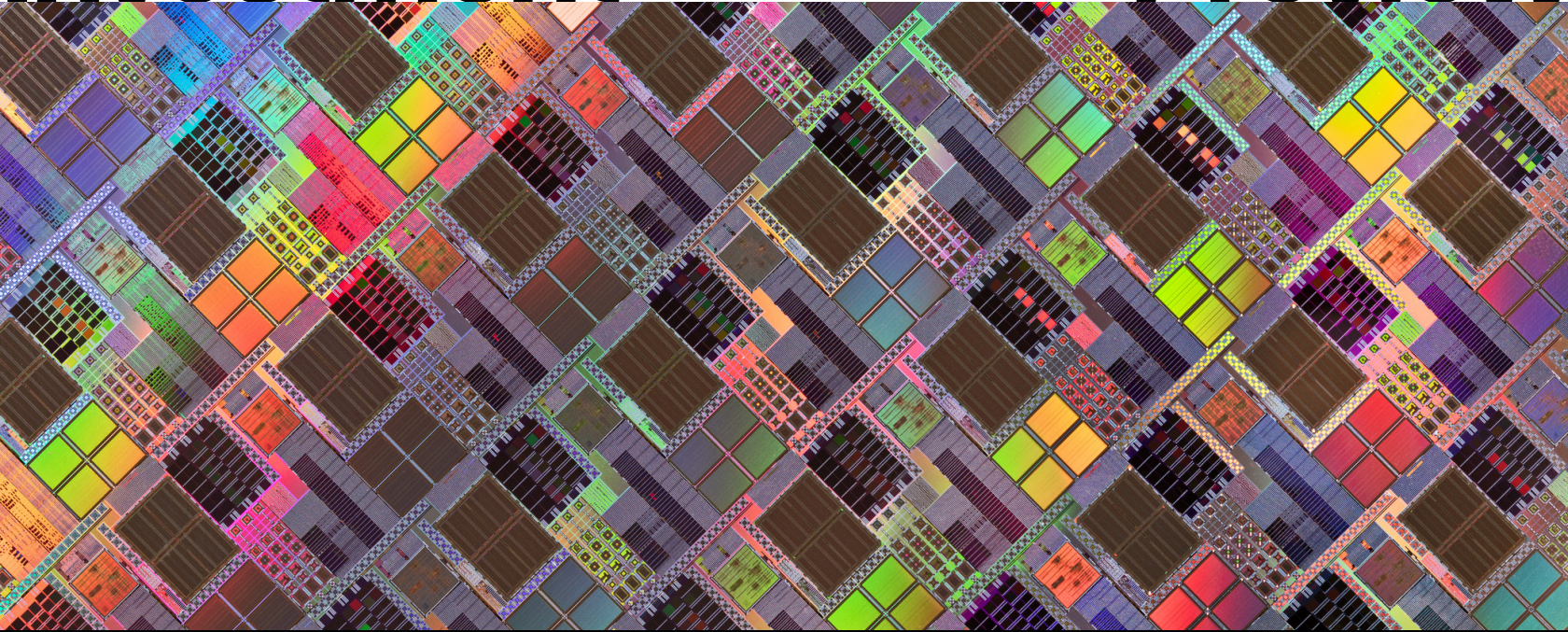
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2026 DCVC Energy + Climate Investment Preview



Why quantum computing matters for energy and climate progress

Here at DCVC Energy + Climate, we'll have important news to share in the coming months about our activities in the area of quantum computing. DCVC's flagship funds have been investing in quantum hardware and algorithms for many years (*see Chapter 2 of our 2026 Deep Tech Opportunities Report*). But as we close this year's Climate Impact Report we wanted to take a moment to explain why such investments also make sense for a fund focused on climate technology and energy innovation.

The first and most important reason is that the hardest problems in chemistry and materials science, including energy production, involve simulating quantum phenomena: electron behavior, chemical bonds, and reaction pathways. That's precisely where classical supercomputers struggle, because the cost of a high-fidelity simulation scales exponentially with the number of particles simulated. Quantum computers are, in principle, the native hardware for this task. Climate-relevant payoffs could include better catalysts (the heart of green hydrogen production, ammonia synthesis, and carbon capture), higher-energy-density battery chemistries, and more efficient industrial processes. Our companies are already using classical computing to try to leapfrog the slow,

expensive process of lab-based trial and error. Quantum computers will help them compress decades of discovery—and do it far more energy-efficiently than conventional compute in data centers.

Beyond that, decarbonization is, in essence, a giant set of optimization problems: how to route power across a grid with millions of intermittent renewable inputs and storage assets, how to schedule charging across growing EV fleets, how to redesign supply chains and site infrastructure for a transforming economy. These combinatorial problems also explode in difficulty as they grow, and quantum approaches are a leading candidate for finding good solutions faster.

DCVC's whole argument is that advanced computation is what carries deep tech across the chasm from pilot to commercial scale. Quantum is one of the frontiers in that same thesis: it's the next leap in computational power applied to the physical world. There are companies out there beginning to cross important thresholds in the search for new ways to embody physical qubits, combine them into logical qubits, and implement error-correction algorithms that open the way to business-relevant, fault-tolerant quantum computing systems. Some parts of this progress are already real; others are still early and/or theoretical. But we're accustomed to investing ahead of the curve, and we don't propose to stop now.



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