



Advanced Materials & Manufacturing Technologies Office

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Abstract

West Gate is the fourth U.S. Department of Energy (DOE) Lab-Embedded Entrepreneurship Program (LEEP), which launched with its first cohort in September 2022. Selected innovators are embedded at the National Renewable Energy Laboratory (NREL) for two years to access its world-class expertise and facilities.

West Gate aligns with the LEEP mission to enable the most promising cleantech entrepreneurs to develop game-changing technologies for a clean energy future. With this in mind, West Gate welcomed Cohort 1 innovators working in materials circularity, building electrification, energy storage, and energy generation. Leveraging the power of the LEEP brand and the NREL network, West Gate is a hub for innovations vital to building a clean energy economy. Working with partners at the Colorado School of Mines, LabStart, Rockies Venture Club, and countless leaders in Colorado's energy ecosystem, West Gate provides innovators with support and training as they build their businesses and make an impact in the energy community.

Through a 2-year cooperative research and development agreement (CRADA), innovators de-risk their technologies and transition them out of the lab and into the marketplace. The technical expertise offered at NREL through the West Gate fellowship advances energy-related materials and manufacturing technologies, increases domestic competitiveness, and builds a clean, decarbonized economy.

West Gate has accomplished the following since its inception:

- 1 cohort, 4 innovators
- \$6.3 million venture funding raised
- 5 new full-time employees, 4 positions open
- 1 finalist for a Global Challenge Award.

Down-selection for Cohort 2 is currently underway. The West Gate program management team will welcome 10 applicants to Golden, Colorado, on May 25, 2023, for the Cohort 2 Finalist Pitch Day. From this pool, recommendations will be provided to AMMTO, IEDO, and the Multi-Office Advisory Committee for selection of 4–5 innovators to seat Cohort 2 in October 2023.

Alignment with Office Mission

At its core, West Gate is an entrepreneurial program that provides technical assistance to further novel manufacturing processes and couples the financial support with the training and education needed to go to market. It advances energy-related materials and manufacturing technologies by capitalizing on NREL's deep technical expertise and unmatched breadth of capabilities to drive the transition toward a decarbonized economy. This program provides a unique opportunity to solve critical energy problems, incubating emerging cleantech start-ups and bolstering DOE's talent pipeline.

By embedding outstanding scientists, engineers, inventors, and budding entrepreneurs at DOE's premier national laboratory for renewable energy and energy efficiency research, West Gate catalyzes market transformation across sectors. Its curriculum focuses on both business and innovator development, which fosters the development and adoption of innovative materials and manufacturing technologies by reducing the risk of entrepreneurial failure and accelerating commercialization.

Program Outline

Innovation: Lab-Embedded Entrepreneurship Program
Node Lead: National Renewable Energy Laboratory
Program Partners: LabStart and Colorado School of Mines

Timeline: Started Fall 2021
Budget:

	FY21 Costs	FY22 Costs	FY23 Costs	Total Planned Funding
DOE Funded	\$41,736	\$909,592	\$626,819	\$1,578,147
Project Cost Share	N/A	N/A	N/A	N/A

References

- 1.) "GCA Finalists: 20 Ground-Breaking Solutions Ready to Transform Fashion." Global Change Award by H&M Foundation, April 2023. bit.ly/3A19WH.
- 2.) Peters, Adele. "Want a Heat Pump or Induction Cooktop? These Startups Make It Easier for You to Switch." Fast Company, 3 April 2023. <https://www.fastcompany.com/90874771/want-a-heat-pump-or-induction-cooktop-these-startups-make-it-easier-for-you-to-switch>.
- 3.) "The 20 Global Change Award 2023 finalists revealed." H&M Foundation, 13 March 2023. <https://hmfoundation.com/2023/03/13/the-20-global-change-award-2023-finalists-revealed>.
- 4.) "Advanced Industries Early-Stage Capital and Retention Grant." Colorado Office of Economic Development & International Trade. <https://oeid.colorado.gov/advanced-industries-early-stage-capital-retention-grant>.

Background

Launched in late 2021, West Gate is the fourth node in the LEEP initiative. The program embeds scientists, engineers, inventors, and entrepreneurs with promising energy technologies at NREL. Throughout the 2-year runway, selected innovators work with scientists who specialize in their research area to de-risk their technologies and ready them for market. West Gate provides a cohesive program community and experience with optimized support services, mentorship, professional development, and network exposure.

Through a competitive selection process, West Gate provides selected innovators with:

- Technical assistance funding of \$175,000 and a Technical Assistance Plan to de-risk, develop, and prove their technology at NREL
- Customized programming to develop their entrepreneurial acumen while making connections to the ecosystem partners needed for commercial and investment opportunities
- Relocation, health care insurance, and travel stipends, which may be available to support qualifying candidates who live more than 50 miles away from the greater Denver area
- An annual stipend of \$100,000 directly awarded to an individual.

Broadly, NREL advances the science and engineering of energy efficiency, sustainable transportation, and renewable power technologies. This LEEP is administered by NREL's Innovation and Entrepreneurship Center (IEC). The IEC is uniquely qualified to realize the West Gate strategy—it has developed a proven model for technology incubation programs with both public and private partners to solve large environmental challenges. West Gate innovators leverage not only the world-class facilities and expertise of NREL and its partners, but also the IEC's entrepreneurial network.

Impact

In September 2022, West Gate welcomed its inaugural cohort composed of four innovators. They are catalyzing impact in synthetic textile circularity, solar panel deflection detection, single-family home electrification, and gravity energy storage. To date, this small but mighty group has raised more than \$6 million in venture funding and created six jobs in their communities.

Mikhail Konev, Tereform: Konev is pioneering a new method in materials circularity with broad potential impact for postconsumer synthetic textiles and packaging. His chemical process separates and depolymerizes polyester plastics so that waste textiles, such as carpet and clothing, can be broken down and remade in their original polymers and plastics form. In March 2023, Konev was selected as a Global Challenge Award finalist, which named his technology one of the 20 ground-breaking solutions ready to transform fashion.¹

Andrew Gabor, BrightSpot: Gabor is focusing on the development of new solar panel defect imaging tools based on ultraviolet fluorescence (UVF) technology and the automated analysis of solar panel and solar cell defect images through machine learning software. Due to the high-throughput nature of UVF, automated inspection of the results is becoming a necessity. In April 2023, Gabor was named as a finalist for the State of Colorado's Early-Stage Capital and Retention grant. Gabor has hired one full-time employee and expanded his Boulder, Colorado, facility.

Grant Gunnison, Zero Homes: Gunnison is helping to decarbonize the built environment by streamlining the home-electrification process for homeowners and contractors. His efforts will accelerate the efforts to electrify the 100 million housing units in need by reducing the insurmountable trillions of hours of labor required to do the work.² Gunnison is supported by the Building Technologies Office. To date, Gunnison has raised \$2.7 million and hired two full-time employees.

Stefan Streckfus, Renewell Energy: Streckfus is capitalizing on inactive oil and gas wells by converting them into gravity energy storage. Renewell installs a winch on each well after sealing it, then lifts a large weight to the top of the well to store energy that later turns a generator by lowering the weight when electricity is more valuable. He is designing and developing a to-scale prototype that will de-risk product development and allow him to demonstrate scale. The Renewell team has raised \$3.3 million, hired three people, and recently presented at NREL's Industry Growth Forum.

Future Work

The down-selection process for Cohort 2 is underway. Ten applicants will travel to NREL for the Cohort 2 Finalist Pitch Day on May 25, 2023. From this pool, DOE will select 4–5 innovators to participate in West Gate, and they will begin work in October 2023.

In June 2023, West Gate will participate in the LEEP Demo Day in Illinois, at Argonne National Laboratory. NREL will host the next LEEP Demo Day in September 2023, which will coincide with Denver Startup Week.

Key Achievements

As of April 2023, 75% of the first West Gate cohort had CRADAs signed, and the program will achieve 100% by June 2023. Achievements beyond agreements are best shown through publications and innovation awards:

- In March 2023, Konev was selected by the H&M Foundation as one of the top-20 groundbreaking solutions ready to transform fashion. The **Global Change Award** received nearly 2,000 applications³ and recognized start-ups from around the world in materials, production, recycling, and design.⁴
- In April 2023, Gabor was selected to compete in the final stage of **Colorado's Advanced Industries Early-Stage Capital and Retention Grant** competition.⁵ This highly competitive program provides winners with non-dilutive funding up to \$250,000 to use toward building or expanding their advanced industry company in Colorado.
- In April 2023, Gunnison was quoted in the **FastCompany** article, "Want a heat pump or induction cooktop? These startups make it easier for you to switch."⁶ He was recognized for supporting the Inflation Reduction Act's rebates and tax incentives for electric appliances by navigating the incentives for homeowners and streamlining the contracting process.
- In May 2023, Streckfus presented at **NREL's 28th annual Industry Growth Forum (IGF)**. This is the premier event for cleantech entrepreneurs, investors, and industry experts to build relationships, showcase innovative technologies, and identify disruptive business solutions.

Technology Transfer

As an applied laboratory, part of NREL's mission includes supporting the transition of innovations into the marketplace for impact. Through collaboration with more than 900 partners in industry, academia, small business, and domestic and international government agencies, NREL accelerates the transition of innovations into real-world applications for both market and mission impact. The West Gate innovators leverage these partnerships, alongside the IEC technology incubation capability, to accelerate their path of technical de-risking and development.

To further hone the "entrepreneurial spirit," the candidate down-selection process ensures that each potential innovator is passionate about commercialization and demonstrates confidence in bringing their technology to market. Applicants are required to disclose what IP they intend to commercialize up front as well as what access they have and who owns the IP. Then, selected innovators begin their West Gate journey by joining an Energy I-Corps cohort. This immersive 2-month program, managed by DOE's Office of Technology Transitions, is a model proven to accelerate market pathways by charging national lab researchers to get out of the lab and into the market. They conduct hundreds of stakeholder discovery interviews and tackle dozens of hours of workshops, trainings, and presentations.

With a tech transfer focus woven throughout the program, West Gate innovators exude entrepreneurial potential with qualities such as being a demonstrated risk-taker, coachable, driven, a compelling communicator, passionate, collaborative, and technically savvy.

Conclusion

West Gate catalyzes market transformation across sectors by enabling the most promising cleantech entrepreneurs to develop game-changing technologies for a clean, decarbonized economy. It fosters the development and adoption of innovative materials and manufacturing technologies by de-risking solutions in the lab before accelerating them to market. Since its inception in 2021, West Gate has welcomed innovators working in materials circularity, building electrification, energy storage, and energy generation. This newest LEEP will continue to grow and expand its impact both on local energy communities and America's clean energy future.

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