



House Finance Committee
And
House Business Affairs & Labor Committee

Senate Finance Committee
And
Senate Business, Labor and Technology Committee

Advanced Industries Accelerator Grant Program
Update as of
June 30, 2022

Advanced industries (AIs) are key drivers of the U.S. and Colorado economies. Comprised of engineering and R&D-intensive companies, they deliver products and services in a wide range of markets, from aerospace to robotics to medical devices. Colorado's AIs include aerospace, advanced manufacturing, bioscience, electronics, energy and natural resources (including cleantech), infrastructure engineering, and technology and information. Together, they account for nearly 30 percent of the state's total wage earnings, around 30 percent of total sales revenue, and almost 35 percent of the state's total exports.

To ensure the progression of this vital aspect of Colorado's economy, the AI Accelerator Program was created in 2013. This initiative promotes growth and sustainability in these industries by driving innovation, commercialization, and public-private partnerships, while also increasing access to early-stage capital and creating a strong infrastructure that enhances the state's capacity to be globally competitive.

OEDIT offers four grants and two global business programs to support AI companies in their various phases of growth. The grants include Proof of Concept, Early-Stage Capital and Retention, Infrastructure Funding, and AI Export. The programs include a network of Global Consultants and export training to build export readiness and help connect Colorado AI companies to global opportunities.

Proof of Concept

Proof of Concept (POC) grants fund research with commercial applications at Colorado research universities, federal labs located in Colorado, and other Colorado labs with valid technology transfer offices. Funding helps pull technologies from the research institutions where they were discovered and connect them to the private sector where they can be developed into commercialized products. This acceleration of applied research leads to the rapid commercialization of products and services and provides significant economic impact and competitive advantage for Colorado and the Advanced Industries.

Grants support the commercialization of technologies at research institutions at two distinct stages along the commercialization pathway: Pre-Commercial Research (Phase I) and Commercialization Preparation (Phase II). Pre-Commercial Research includes proof of principle studies and other studies on intellectual property and resulting prototypes that demonstrate the utility of a technology for a specific application. Commercialization Preparation includes the process of creating a commercial opportunity assessment for a technology and the development of a commercialization plan.

In Fiscal Year 2022, 57 POC grants were awarded to researchers at Colorado research institutions, bringing cutting-edge technologies closer to market. Since the program's inception, 324 POC grants have been funded. Below are examples of two success stories.

University of Colorado Boulder, High Performance Battery Materials for Affordable Grid Scale Energy Storage

This project, led by University of Colorado Boulder Professor Michael Marshak, was awarded a \$93,750 Proof of Concept Grant in Fiscal Year 2021. The aim of this project is to develop a scalable manufacturing process for a new type of redox flow battery electrolyte for long-duration energy storage. Broomfield-based company OTORO Energy is partnering on this project and has exclusively licensed this technology for manufacturing and scale up.

This project continues to complete its milestones and has resulted in two jobs being created in Fiscal Year 2022. Additionally, in September 2021 OTORO Energy was one of four companies selected by the Department of Energy to receive grant funding to support the research and development of long-duration energy storage technologies. The \$4.1 million in funding awarded will be used to continue to improve the cost, scalability, and performance of this flow battery technology.

Colorado School of Mines, TuffBrane Membranes for Water Electrolysis Applications

This project, led by Colorado School of Mines Professor Andrew Herring, was awarded a \$150,000 Proof of Concept Grant in Fiscal Year 2021. The aim of this project is to develop TuffBrane, a breakthrough anion exchange membrane to generate hydrogen with zero greenhouse gas emissions through alkaline electrolysis. Denver-based company Spark Ionix is partnering on this project and has exclusively licensed this technology.

Since the project's inception a patent has been issued for this novel technology. The successful work completed has allowed Spark Ionix to rent laboratory space and equipment. Additionally, this work has leveraged \$1.3 million in follow-on funding, \$500,000 in capital investments, and \$200,000 in projected annual revenue increases.

Early Stage Capital and Retention

Early Stage Capital and Retention (ESCR) grants fund companies using technologies developed in proof of concept or other early stage start-ups that have created viable products that meet a market need. Grants support technology commercialization by funding product development in preparation for a product launch or the advancement of a product or technology to achieve a commercial milestone that significantly increases the company's value and stability and better positions the company for follow-on investment, including through the federal Small Business Innovation Research program, angel funding, or venture capital. The resulting product or service must be manufactured or performed in Colorado.

Grant funding does not compete with existing marketplace funding opportunities, but rather supplements and fills an existing void for capital market's tendency to under-invest in early stage technologies. ESCR grants allow early stage businesses to complete commercial activity such as production, sales and distribution, and business growth. Funds can also be used for business start-up activities, market validation, and pre-production prototypes.

In Fiscal Year 2022, 54 Early Stage Capital and Retention Grants helped Colorado companies further advance their commercialization efforts. Since the program's inception, 346 Colorado companies have been funded. Below are examples of two success stories.

Emergy Inc., Boulder, Colorado

Emergy was awarded a \$250,000 Early Stage Capital and Retention Grant in Fiscal Year 2020 to continue developing and scaling a proprietary process to produce food ingredients and finished goods from nutrient-rich mushroom root, resulting in sustainable and whole-cut products. Today Emergy's products can be found commercially in retail and food service under the brand name Meati™.

Since the grant's inception Emergy has built a new lab space in Boulder, CO. This has resulted in \$50

million of capital investments for real estate and equipment. They are continuing to expand their footprint with a larger facility under construction to serve national customers. Additionally, Emerge has created 74 jobs and has raised venture capital investments totaling \$228 million.

Ursa Major Technologies, Inc., Berthoud, Colorado

Ursa Major Technologies was awarded a \$250,000 Early Stage Capital and Retention Grant in Fiscal Year 2019 to construct a new state-of-the-art testing facility for their family of high performing, low-cost rocket engines. These engines serve the growing launch and hypersonic markets.

Ursa Major Technologies has made capital investments totaling \$10 million for real estate and equipment. They plan to expand their current test site to meet demand from the commercial and government contracts. Additionally, in Fiscal Year 2022 they closed an \$85 million Series C fundraising round and created 100 jobs.

Collaborative Infrastructure Grants

In order to align private industry and Colorado Research Institutes, Collaborative Infrastructure Grants help fund Advanced Industry projects that substantially build or utilize existing infrastructure to support or enhance the commercialization of Advanced Industry products, assist Advanced Industry start-ups with mentoring or access to outside capital, or contribute to the development of an Advanced Industry workforce.

Collaborative Infrastructure grants are used to assist in the implementation and execution of action items identified in Advanced Industries Strategic Plans, as developed through the Colorado Blueprint Key Industry Network initiatives in 2013. Collaborative Infrastructure Grants may also be used to assist the implementation of newly identified action items that are needed to accelerate such Advanced Industries, and to leverage federal funding opportunities that address a specific need of an Advanced Industry.

In Fiscal Year 2022, 9 Collaborative Infrastructure grants were awarded. Since the program's inception, 44 Collaborative Infrastructure grants have been funded. Below is an example of a success story.

Warehouse Business Accelerator, Loveland, Colorado

The Warehouse Business Accelerator was awarded a \$250,000 Collaborative Infrastructure Grant in Fiscal Year 2021 to develop the Warehouse Hub. This facility enables companies to bridge a period of scaling and growth with a transitional location that includes a plug-and-play manufacturing and production facility, shared equipment lab, and an onsite marketing studio.

In Fiscal Year 2022 the Warehouse Hub supported 13 companies with scale-up programming. The companies collectively brought in \$6.4 million in revenues. Additionally, the Warehouse Hub enabled the retention of 142 jobs and creation of 16 jobs. It received \$305,000 in angel investment and made capital investments in equipment totaling \$126,800.

Grants Awarded

The AI Accelerator Program's statute requires an allocation of at least 15% of funds to Proof of Concept

grants, 15% of the funds to Early Stage Capital and Retention Grants, and up to 15% of the funds to Collaborative Infrastructure. The table below summarizes all grants awarded in Fiscal Year 2022.

Status	Program	# of Awards	\$ Awarded	\$ Spent to date	Jobs Created	Jobs Retained	New Companies Created	Follow- On Capital	IP	Projected Annual Revenue
Active Grants	Proof of Concept	57	\$4,831,212	\$3,838,869	35	54	11	\$5,947,483	18	\$1,630,000
	Early Stage Capital and Retention	54	\$13,360,704	\$2,359,786	62	58	1	\$23,270,00	10	\$5,373,000
	Collaborative Infrastructure	9	\$3,463,464	\$161,900	137	214	9	\$1,427,424	0	\$2,677,500
Totals		120	\$21,655,380	\$6,360,555	234	326	21	\$30,644,907	28	\$9,680,500

Since the program's inception in 2013, \$128,117,170 in Advanced Industries grants have been funded. To date, the program successes include the creation of approximately 4,423 new jobs and approximately 4,597 jobs retained. Additionally, these funds have helped the technologies acquire an additional \$2,501,676,764 in grants and investments to commercialize further.

Advanced Industry Export Accelerator

The Advanced Industry (AI) Export Grant provides financial assistance for aspiring and current Colorado exporters. The grant program supports small and medium-sized AI businesses through funds to offset international business development and marketing costs. Qualified expenditures include:

- Translation services for contracts;
- Legal fees related to intellectual property protection abroad and compliance/regulatory issues;
- Conducting due diligence or credit reviews on potential buyers or distributors;
- Travel-related costs for international sales trips and trade shows;
- Costs for exhibiting at an international trade show; and

International business development grants provide expense reimbursements to businesses that are new to exporting or are expanding into new export markets, helping them to grow and accelerate their businesses. OEDIT reimburses up to \$15,000, and Colorado businesses provide a 1:1 match for specific international export development needs.

Additionally, AI Export funding is used to support the Global Consultant Network (GCN). GCN provides a network of international consultants who connect Colorado companies to global opportunities. Colorado companies have access to international consultants that provide valuable in-country market research for major strategic markets, including Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Japan, Malaysia, Mexico, the Netherlands, Philippines, Spain, Thailand, United Kingdom. These consultants can assist Colorado companies to:

- Understand the opportunity for a product or service in the international market
- Navigate the local regulatory and business environment
- Identify potential in-market partners
- Set meetings with potential partners and attend meetings upon request

AI Export funding offsets the cost of the services for eligible Colorado companies.

AI Export grants and GCN services were awarded to 18 Colorado companies to advance Colorado exporting in fiscal year 2022. Since the program's inception in 2013, 147 Colorado companies have been funded. The table below summarizes all grants awarded in fiscal year 2022.

Status	Program	# of Awards	\$ Awarded	Jobs Created	Jobs Retained	Immediate Export Sales	Projected Export Sales after 1 year
Active Grants	Export Accelerator	18	\$98,579	5	37	\$1,267,255	\$10,060,000

OEDIT tracks companies' export sales, jobs created, and the nature of the jobs created resulting from the AI Export Acceleration Program grants. Return on investment (ROI) for the state is calculated by tracking total actual export sales and dividing this by every dollar the state spends on international business development grants. As of September 2022, the program had an initial ROI of \$1:\$13. The

three stories below show successful international activity leading to job creation and business growth.

PharmaJet Inc., Golden, Colorado

PharmaJet is a bioscience company that produces needle-free jet injection technology, composed of a single-use auto-disabling needle-free syringe, disposable filling adapter for downloading vaccine into the syringe, and a long-life spring powered injector that facilitates the liquid injection.

The AI Export Grant funding was used to support a combination of travel, consulting, and legal expenses associated with continued efforts to develop export markets for the PharmaJet intradermal technology use, primarily for the Global Polio Eradication Initiative. The support facilitated engagement (legal agreements for collaboration partners and distributors) and direct meetings with representatives in Ministries of Health in 12 countries within the Middle East/Africa/Asia. These meetings reinforce the commercial use of the PharmaJet product, and in tandem have been used to reinforce other larger grant applications and collaborations which have since been awarded/approved, from USAID and the WHO for large scale pilots or mass immunization events which will ensure more than 1 million children are immunized for polio this year, and potentially multiples of that figure in future periods.

PharmaJet's actual sales from these AI Export-funded activities were \$500,000 with a projected figure of \$7 million in the next year.

Tailwind Nutrition, Durango, Colorado

Tailwind Nutrition manufactures and sells endurance sports and recovery drinks for athletes training and competing in 2+ hour sports like trail and ultra-running, road and mountain biking, hiking, obstacle course racing and more. In 2021, it became clear that the UK and EU had a huge potential for growth, but the limiting factor was cost (freight and duties) and shipping times from US to Europe. In order to address these issues, Tailwind Nutrition pursued a bonded warehouse and co-manufacturing in the EU.

The AI Export Grant and Global Consultant Network were used to enlist the help of a consultant to develop packaging that adhered to all the requirements, and to provide localization for the German, French, and English speaking markets. Packaging, in particular, is highly specialized due to the labeling requirements that vary from country to country within the EU.

International sales for Tailwind grew by 28% from \$954,000 to \$1.2 million. In Europe specifically, sales grew by 48% from \$353,000 to \$525,000. They expect this number to grow as the bonded warehouse comes online. Tailwind Nutrition's level of experience has increased dramatically with the support of the AI Export Grant and Global Consulting Network.

Octave Photonics, Louisville, Colorado

Octave Photonics designs and manufactures components that are used for precision lasers. The AI Export Grant was used to purchase a booth at the Conference on Lasers and Electro-Optics (CLEO), a major international conference and trade-show in San Jose, California. They spoke with over 100 potential customers, and are positioned to close several deals based on connections made at the conference in addition to the order placed at the trade show.

They learned considerably more about the needs of the foreign markets. In particular, they realized that

many customers do not have a full understanding of how the products work and when they should be purchasing them. They learned that we need to improve their product documentation and increase their outreach to foreign markets in order to connect with customers and inform them about the capabilities and limitations of their product offerings.

Their attendance to the trade show will lead to increased international sales and federal funding to the company. As a result of their attendance of the CLEO conference they intend to hire a fourth employee within several months, with plans to hire a fifth person within the next 18 months. Octave Photonics' actual sales totaled \$50,000 with a projected outcome of \$160,000 in the next year.