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November 01, 2024

The Honorable Joseph Lombardo
Office of the Governor
One Hundred One North Carson Street
Carson City, Nevada 89701

Mr. Nick Anthony, Director
Legislative Counsel Bureau
401 South Carson Street
Carson City, Nevada 89701

Re: Nevada Knowledge Fund Annual Report 2024

Governor Lombardo and Director Anthony:

NRS 231.1595 requires the Executive Director to report annually to the Governor and to the Director of Legislative Counsel Bureau on the progress of the Knowledge Fund. The attached report is for the period covering November 1, 2023, through October 31, 2024.

Sincerely,

Dorian Stonebarger, Deputy Director
on behalf of
Thomas J. Burns
Executive Director
cc:

Ryan Cherry, Governor's Chief of Staff
Amy Stephenson, Director, Governor's Finance Office
Wayne Thorley, Senate Fiscal Analyst
Sarah Coffman, Assembly Fiscal Analyst

Morgan Barlow, Program Analyst, Fiscal Analysis Division
Roxana Gifford, Executive Branch Budget Officer, Governor's Finance Office
Leanndra Diossa, Director of Administration, Governor's Office of Economic Development
Karsten Heise, Snr.Director Strategic Programs & Innovation, Governor's Office of Economic Development

GOED

THE KNOWLEDGE FUND 2024

THE KNOWLEDGE FUND ANNUAL REPORT

NEVADA GOVERNOR'S OFFICE OF ECONOMIC DEVELOPMENT

TABLE OF CONTENTS

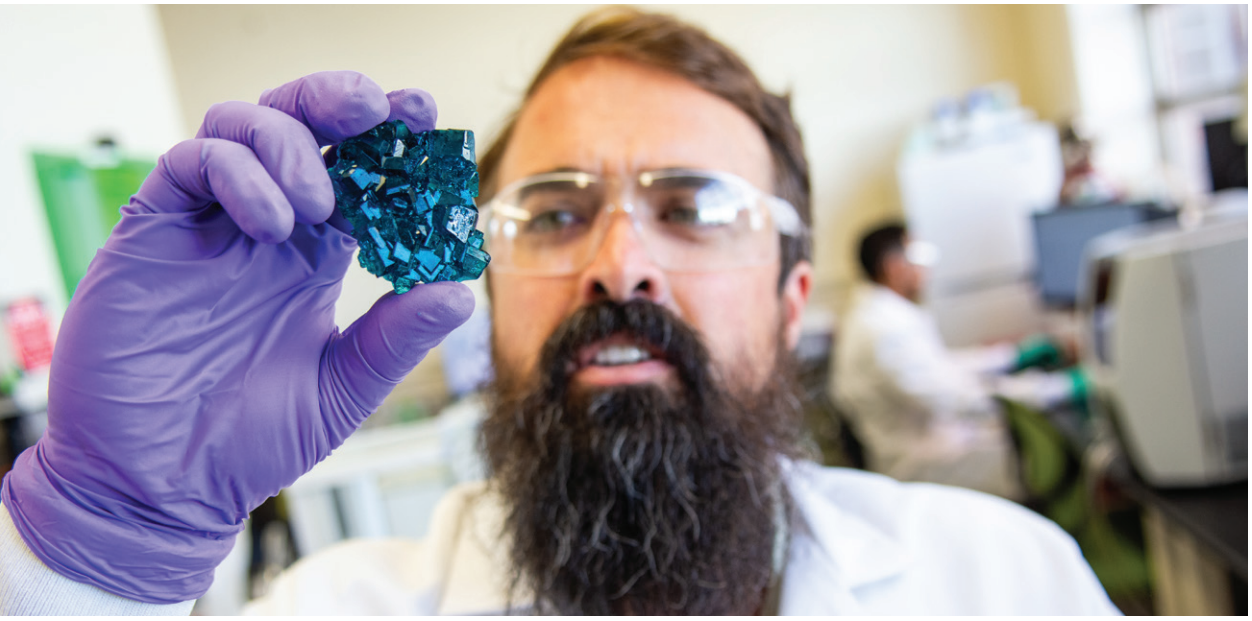
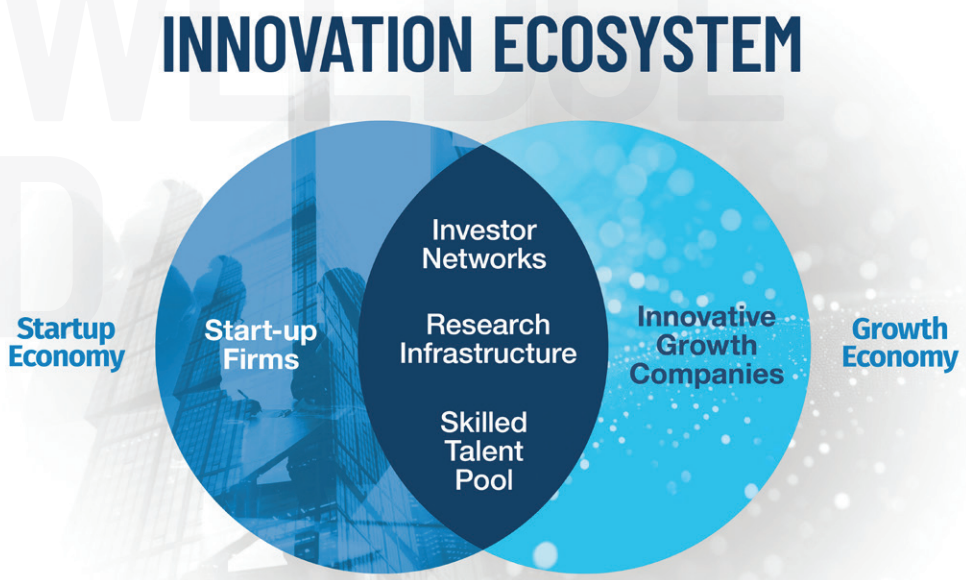


Photo courtesy of University of Nevada, Reno

WHAT THE KNOWLEDGE FUND DOES AND WHY IT MATTERS

Photo courtesy of Shutterstock.com

The Knowledge Fund was enacted during the 2011 Nevada Legislative Session and first funded in fiscal year 2014. It was created to further research, development, and ultimately commercialization of products by Nevada's research universities and institutions.



The Knowledge Fund is the sole instrument that the Governor's Office of Economic Development has to foster an innovation economy in Nevada. The fund promotes innovation by turning scientific research into market opportunities at Nevada's three research institutions – University of Nevada, Reno, University of Nevada, Las Vegas, and Desert Research Institute – in areas that GOED has targeted for economic growth. Importantly, because this innovation-driven economy is built on a foundation of identifying and transforming new knowledge, the system continues to produce these benefits well into the future and beyond the boom-and-bust lifecycle of any one industry or business. With the help of the Knowledge Fund, Nevada can continue generating high-paying jobs and attracting innovative firms to the state. In short, an innovation economy strengthened by the Knowledge Fund raises the overall quality of life for the people of our state.

The Knowledge Fund is the most critical and only state program to foster Nevada's innovation economy.

For example, the 2022 bipartisan CHIPS and Science Act catalyzes investment in domestic semiconductor manufacturing capacity and jump-starts Research and Development (R&D) and commercialization of cutting-edge technologies. It creates new regional high technology hubs and enlarges a science, technology, engineering, and math (STEM) workforce. The legislation develops solutions to pressing national, societal, and geostrategic challenges. While the CHIPS Act provides funding from the federal government over the next decade, these allocations are also regarded as seed-investments. Substantial capital from states and local stakeholders is required to bolster the federal share.

Nevada has benefited from the CHIPS Act initiatives, which present generational opportunities for the state not witnessed in decades. The Knowledge Fund has been instrumental in that success.

Led by UNR, Nevada in 2023 was awarded a **Tech Hub Designation** as one of only 31, and subsequently a full Tech Hub as one of just 12 in July 2024. In addition, both UNLV and the Desert Research Institute are members of the Arizona State University-led **Southwest Sustainability Innovation Engine (SWSIE),** which was selected as one of the first-ever NSF Regional Innovation Engines, awarding 10 teams spanning 18 states. In addition, UNR received an NSF Engines Development Award and submitted its pre-application, **"Recharge Nevada – a Coalition for Energy Innovation",** for a full NSF Engine in August 2024.

The Knowledge Fund has provided the strategic base upon which both EDA Tech Hub and National Science Foundation Engines are built, and Nevada would not have been competitive without it. However, the Knowledge Fund needs continued financial support from the Nevada General Fund to fulfill the programs' crucial deliverables and maximize their economic impact.

Photo courtesy of GOED

Metrics Table

Metric	Since Knowledge Fund Inception			
	UNLV	UNR NCAR	DRI	All research universities
GOED funding provided $	$15,688,635	$9,313,236.41	$12,987,831.46	$37,376,466.46
Total $ amount of sponsored research contracts/awards	$31,672,149	$223,700,000	$61,594,331	$348,147,628.50
Gifts/awards rec'd $ (separate NOT part of sponsored research)	$7,632,615	$9,500,000	$3,994,000	$28,759,230
# of sponsored research contracts	12	1,125	14	1,163
# of research grants awards received	48	59	2	157
# of spin-out companies	5	18	4	32
# of jobs created (NOT at university)	15	881	171	1,082
# of companies relocating to NV	7	24	20	58
# of faculty hired/rec'd KF support	14	23	97	148
# of student interns at projects and/or companies engaged with projects	131	117	14	393
# of patents filed	88	129	3	308
# of patents issued	22	129	-	173
Commercialization of revenue	$2,381,000	$ -	$ -	$2,381,000
VC capital raised (UNR-NCAR only)		**$327,000,000**		

Economic Impact

In August 2024, Prof. emeritus Tom Harris from the University of Nevada, Reno's Department of Economics conducted an Economic Impact analysis of the three universities' sponsored research dollars and other gifts/awards received as a direct result of the Knowledge Fund. The economic impact of the Knowledge Fund was based on estimates by the IMPLAN microcomputer input-output software IMPLAN LLC, 2022. Economic Impact was assessed by estimating jobs created and state tax revenue raised as a result of $37.4 million of cumulative Knowledge Fund investments.

Direct Jobs created outside the university: **1,004**

Indirect jobs created (IMPLAN calculation): **5,823**

State tax revenue generated (IMPLAN calculation): **$32,363,56**

The Economic Impact from such associated venture capital raised by university-affiliated companies further leverages the positive effect of the Knowledge Fund on Nevada's economy and tax revenue.

Indirect jobs created (IMPLAN calculation): **1,149**

State tax revenue generated (IMPLAN calculation): **$13,528,252**

Table 1 shows the impacts of UNR research investment. From the $243.4 million investment, $223.5 million were estimated to be expended within the state of Nevada. From the direct expenditures of $223.5 million and the economic linkages within the state, the total economic activity from UNR research investments was estimated to be $433.4 million. With total employment impacts of 4,008 employees, total employee compensation of $212.6 million, and total value-added impacts of $274.1 million.

Table 1. Employment, labor income, value added, andeconomic output impacts from GOED investments in University of Nevada, Reno research

Impact	Employment	Employee Compensation	Value Added	Output
Direct	2,943	$156,315,848	$156,315,848	$223,467,974
Indirect	355	$16,037,065	$35,516,585	$75,083,573
Induced	710	$40,245,218	$82,259,670	$134,868,234
Total	**4,008**	**$212,598,131**	**$274,092,103**	**$433,419,781**

ECONOMIC IMPACT

Table 2 shows the impacts on UNLV research investment results. From the $35.6 million investment, the total economic activity was estimated to be $69.1 million. With total employment impacts of 639 employees, total employee compensation of $33.9 million, and total value-added impacts of $43.7 million.

Table 2. Employment, labor income, value added, and economic output impacts from GOED investments in University of Nevada, Las Vegas research

Impact	Employment	Employee Compensation	Value Added	Output
Direct	469	$24,926,760	$24,926,760	$35,635,111
Indirect	57	$2,557,336	$5,663,619	$11,973,132
Induced	113	$6,417,666	$13,117,464	$21,506,637
Total	**639**	**$33,901,762**	**$43,707,843**	**$69,114,879**

Table 3 shows the impacts on DRI research investment results. From the $65.8 million investment, the total economic activity was estimated to be $127.2 million. With total employment impacts of 1,176 employees, total employee compensation of $62.4 million, and total value-added impacts of $80.4 million.

Table 3. Employment, labor income, value added, and economic output impacts from GOED investments in Desert Research Institute research

Impact	Employment	Employee Compensation	Value Added	Output
Direct	864	$45,879,177	$45,879,177	$65,588,531
Indirect	104	$4,706,928	$10,424,226	$22,037,257
Induced	208	$11,812,094	$24,143,470	$39,584,238
Total	**1,176**	**$62,398,199**	**$80,446,873**	**$127,210,026**

Table 4 shows tax impacts from GOED investments in UNR research. Because UNR is a state entity it does not pay sales tax for direct purchases; however, expenditures by NSHE employees do impact state and local tax payments as do sales taxes and other personal state and local taxes. Also, NSHE does not pay for Social Security but pays for Medicare. The model was adjusted to reflect these payments. With these adjustments to the model, total local and county taxes from GOED investments in UNR research are estimated to be $10.9 million, state taxes of $22.3 million and federal taxes of $116.8 million.

Table 4. Local, state and federal tax impacts from GOED investments in UNR research

	Local/County	State	Federal	Total
Direct	$394,001	$634,726	$66,346,347	$67,375,075
Indirect	$2,020,306	$4,144,151	$14,670,476	$20,834,932
Induced	$8,513,430	$17,494,553	$35,803,333	$61,811,316
Total	**$10,927,737**	**$22,273,430**	**$116,820,156**	**$150,021,323**

Table 5 shows tax impacts from GOED investments in UNLV research. With model adjustments as to taxes explained earlier, the UNLV tax model was adjusted to reflect these payments. With these adjustments to the model, total local and county taxes from GOED investments in UNLV research are estimated to be $1.7 million, state taxes of $3.6 million and federal taxes of $18.6 million.

Table 5. Local, state and federal tax impacts from GOED investments in UNLV research

	Local/County	State	Federal	Total
Direct	$62,829	$101,216	$10,579,858	$10,743,903
Indirect	$322,166	$660,843	$2,339,414	$3,322,423
Induced	$1,357,586	$2,789,752	$5,709,345	$9,856,684
Total	**$1,742,581**	**$3,551,812**	**$18,628,617**	**$23,923,010**

Table 6 shows tax impacts from GOED investments in DRI research. With model adjustments as to taxes explained earlier, the DRI tax model was adjusted to reflect these payments. With these adjustments to the model, total local and county taxes from GOED investments in DRI research are estimated to be $3.2 million, state taxes of $6.5 million and federal taxes of $34.3 million.

Table 6. Local, state and federal tax impacts from GOED investments in DRI research

	Local/County	State	Federal	Total
Direct	$115,641	$186,294	$19,472,855	$19,774,790
Indirect	$592,966	$1,216,321	$4,305,829	$6,115,116
Induced	$2,498,718	$5,134,705	$10,508,387	$18,141,810
Total	**$3,207,324**	**$6,537,319**	**$34,287,072**	**$44,031,715**

For venture capital raised by (Nevada Center for Applied Research (NCAR)-affiliated companies, the amount stated by GOED is $319,200,200. This analysis is only for the affiliated companies associated with the University of Nevada, Reno. These affiliated companies were allocated to IMPLAN economic sectors after discussion with GOED personnel for estimation of impacts. Also using the IMPLAN database, imports for these sectors were estimated so only expenditures made in Nevada will be used.

ECONOMIC IMPACT

Table 7 shows the impact results. From venture capital raised by NCAR-affiliated economic sectors, total economic activity in the state of Nevada was estimated to be $337.1 million with total employment impacts of 1,149 employees, total employee compensation of $92.0 million, and total value-added of $168.3 million.

Table 7. Venture capital impacts raised at UNR from NCAR-affiliated economic sectors

Impact	Employment	Employee compensation	Value added	Output
Direct	543	$54,524,123	$98,820,172	$214,712,199
Indirect	291	$19,395,211	$34,512,248	$64,010,097
Induced	315	$18,063,878	$35,000,973	$58,382,015
Total	**1,149**	**$91,983,212**	**$168,333,393**	**$337,104,311**

Table 8 shows tax impacts from venture capital raised by NCAR-affiliated economic sectors. From table 8, approximately $6.6 million in local and county revenues, $13.5 million in state revenues, and federal revenues of $14.5 million were generated by activities of venture capital by University of Nevada, Reno-affiliated economic sectors.

Table 8. Local, state and federal tax impacts at UNR from NCAR-affiliated economic sectors

	Local/County	State	Federal	Total
Direct	$4,498,118	$9,248,915	$14,147,597	$27,894,630
Indirect	$1,006,092	$2,065,969	$5,208,011	$8,280,072
Induced	$1,077,422	$2,213,368	$4,974,208	$8,264,998
Total	**$6,581,632**	**$13,528,252**	**$24,329,816**	**$44,439,700**

SUCCESS STORIES

Photo courtesy of Blackfire Innovation

UNLV

Rumble Strip

The Knowledge Fund support has been two-fold: use-inspired research and further development of the technology towards market application. In addition, through its Entrepreneur-in-Residence (EIR) program a new company was created.

A Las Vegas-based tech company is innovating a smart solution to the problem of distracted driving, which kills thousands of pedestrians each year.

Smart Lane Safety Systems, a company built on research and development at UNLV's Transportation Research Department, has innovated a technology it calls the Dynamic Rumble Strip, a system designed to keep drivers' attention on the road while pedestrians are crossing.

Photo courtesy of University of Nevada, Las Vegas

The rumble effect is only active when pedestrians are present, which reduces nuisance and maximizes responsiveness for drivers. The company has tested units in parking lots and active streets on the UNLV campus as well as in Henderson in coordination with regional authorities.

GOED's Knowledge Fund allowed UNLV to conduct the early research-and-development stages of the project. The company is now preparing for its first commercial sales of the Dynamic Rumble Strips in 2025. This collaboration between GOED and UNLV has led to important innovation that is now poised to increase roadway safety and, hopefully, save lives.

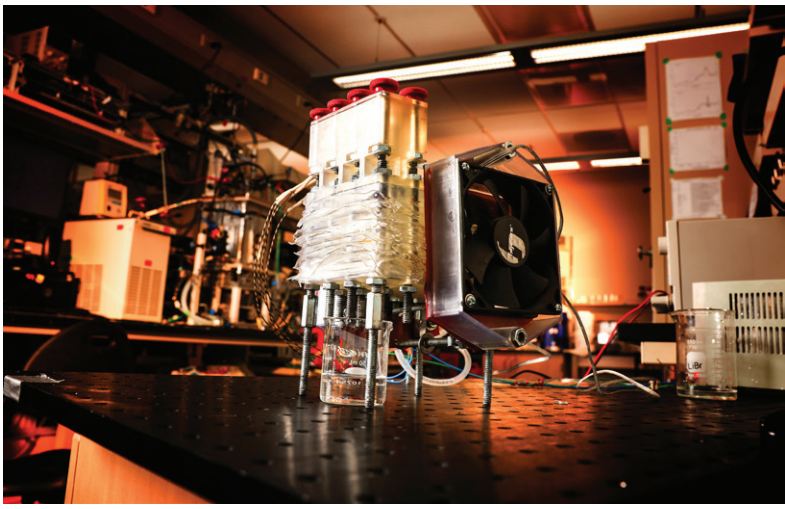
Smart Lane Safety Systems will introduce the Dynamic Rumble Strips in the Las Vegas region in partnership with state and local agencies. After launching the product in Las Vegas, the company plans to expand statewide before reaching the national and global markets. Over 7,000 pedestrians die in roadways each year. The goal is to be part of an array of solutions available to municipalities and state agencies that, when combined, significantly reduce this tragic statistic.

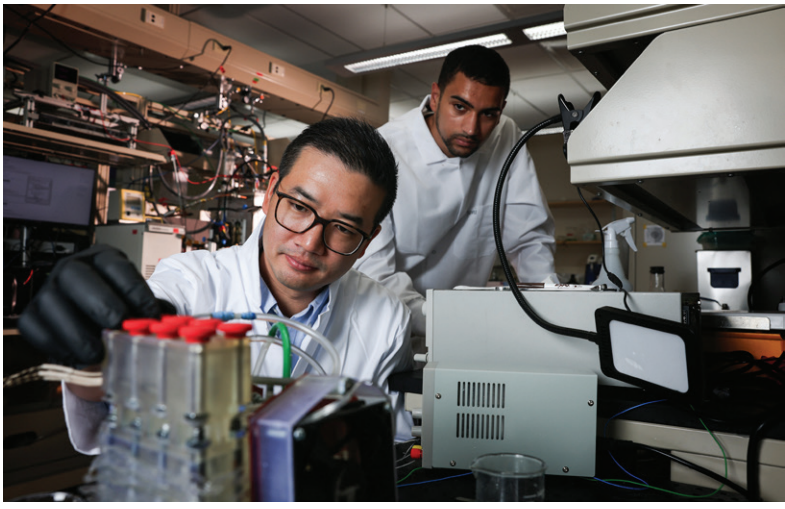
SUCCESS STORIES

WAVR

The Knowledge Fund support has been two-fold: use-inspired research and development with direct ties to CHIPS Act's NSF Engines program – SWSIE. In addition, through the ASPIRE and Entrepreneur-in-Residence (EIR) program a new company was created.

As temperatures rise and water reserves become scarcer in the Southwest, a UNLV startup is developing an exciting technology to capture water vapor from the air and harness it for commercial and individual use.





Photos courtesy of University of Nevada, Las Vegas

Co-founded and led by UNLV professor H. Jeremy Cho, WAVR Technologies, is the premiere university business spinoff from the Southwest Sustainability Innovation Engine, a National Science Foundation-funded collaboration of UNLV, regional universities and a host of public and private partners. In fact, WAVR is the first-ever business supported by the $160 million NSF Southwest Sustainability Innovation Engine. Dr. Cho, who arrived at UNLV from Princeton in 2021, participated in UNLV's ASPIRE program which under the auspices of the Knowledge Fund engages faculty and students for a "customer discovery sprint" and "prototype & launch sprint" to develop, test, and launch new ideas into the market. Dr. Cho saw the need with water levels at Lake Mead getting lower and lower.

Clark County uses hundreds of millions of gallons of water every single day. However, one can find that amount of water in the first 30 feet of ambient air above the county. Effectively, the atmosphere represents a really big "invisible river".

SUCCESS STORIES

And now, that "invisible river" not only promises a regional economic boon, but more importantly, a long-awaited new source of sustainable water. Following ASPIRE, Dr. Cho and his water capture technology was paired with Entrepreneur-in-Residence's or EIR's Rich Sloan who provided business expertise to help Dr. Cho transform science into a market application. Thanks to the Knowledge Fund's dual commercialization program – ASPIRE and EIR – WAVR devices will be assembled in Las Vegas for municipal needs, hospitality applications, the food and beverage industry, medical therapeutics. Ultimately, WAVR aims to provide at-home and vehicular-based units that will generate vital water for a thirsty region.

Quantum Copper

The Knowledge Fund support has been two-fold: university developed technology was identified by serial entrepreneur as part of the Entrepreneur-in-Residence (EIR) program with a new company created and the technology licensed. In addition, the Knowledge Fund supported further testing and validation of the technology's market application in the university faculty member's laboratory.

The state of Nevada efforts in building a complete lithium circular economy is heavily focused on new materials for current and next generation batteries that drive energy storage in the 21st century. But lithium battery-involved fires caused by failing cells or car crashes have revealed vulnerabilities in the new technology. These fires can release toxic chemicals, stop traffic and even shutter businesses.

In 2016, Dr. Pradip Bhowmik a longtime UNLV organic and polymer chemistry professor discovered that his developed polymers are more fire resistant than traditional technologies, which retard fires but can be harmful to the environment and are difficult to dispose of safely.

Serial entrepreneur Rahul Harkawat became aware of Bhowmik's technology while being a participant in a Knowledge Fund project dedicated to university developed technology commercialization.

Photos courtesy of University of Nevada, Las Vegas

SUCCESS STORIES

Rahul became the inaugural entrepreneur in residence and the successor Knowledge Fund program. This resulted into the formation of Quantum Copper as a university spinout company with Rahul taking on the role as founder and CEO.

Quantum Copper uses Dr. Bhowmik's polymer as a component of next-generation materials for energy storage devices such as batteries and supercapacitors. The company is in the final stages of developing and bringing to market products to create safer and more-fire-resistant battery casings, separators, anodes, and current collectors. While further developing the technology and products Dr. Bhowmik performed testing and validation at his UNLV lab with Knowledge Fund support.

Quantum Copper has raised the first rounds of seed capital with the GOED overseen state venture capital program, Battle Born Venture, under the auspices of the federal State Small Business Credit Initiative (SSBCI) providing risk capital.

Heligenics

The Knowledge Fund support has been two-fold: funded the research center for developing use-inspired university developed technology and preparing for a major federal research grant application. In addition, a new company was created and spun out of the university.

In fiscal year 2014, as one of its first funded projects the Knowledge Fund created the Nevada Institute of Personalized Medicine (NIPM) at UNLV. The Institute was the brainchild of UNLV professor Marty Schiller. This was a response to approximately 1 in 20 people suffering from a genetic disorder by the age of 25 and approximately 1 in 10 overall, yet Nevada has almost no in-state infrastructure to diagnose and treat affected patients. NIPM became a biomedical center of excellence through a total of $11.4M five-year awards from the National Institute of Health. The award represents the first center of biomedical research excellence program led by UNLV making it the first in the nation to focus exclusively on personalized medicine.

Photos courtesy of University of Nevada, Las Vegas

SUCCESS STORIES

Every cell in our body has 21,000 genes, and figuring out how these genes work is the key to understanding how dysfunction causes disease and how to treat it. Dr. Schiller saw the commercial applications of NIPM's laboratory findings, which took him in a new direction.

Dr. Schiller launched the pharmaceutical startup Heligenics in 2018 with the help of the Knowledge Fund. Heligenics offers cutting-edge genomic solutions to pharmaceutical and biotechnology companies as well as healthcare providers. The company aims to improve existing medicines and therapeutics with the help of genetic research.

There are lots of practical applications for this technology. For example, Heligenics might help a drug company reduce the side effects of a certain drug or transform a daily injectable into a monthly. Heligenics could help doctors find the key to unlocking the best treatment plan. So far, Heligenics has improved common drugs such as Aspirin, Tylenol, insulin for treating diabetes, and Humira for autoimmune disorders.

Heligenics has raised the first rounds of seed capital with the GOED-overseen state venture capital program, Battle Born Venture, under the auspices of the federal State Small Business Credit Initiative providing risk capital. The company also attracted highly competitive federal Small Business Innovation Research grants.

Tech Park

The Knowledge Fund support has been provided via ecosystem building efforts which have strengthened the launch of the UNLV Tech Park and will thereby substantiate its scaling and growth.

Southern Nevada's economy is experiencing a boom of innovation, technology and entrepreneurial spirit.

Nowhere is this energy better reflected than at the UNLV Tech Park which could not have happened without the Knowledge Fund. It is a sprawling 122-acre campus home to more than 100 tech companies. Many, like LG and T-Mobile, never had a corporate home in Las Vegas until the Park gave them one.

Designated by the Clark County Commission as the capital of Las Vegas's new "Innovation District," the Park houses sectors that have never flourished in Southern Nevada: biotech, sports tech, AI, robotics, lithium and clean energy, cybersecurity, human performance, and fintech. The Park is even home to two burgeoning "tech unicorns," Geocomply and Sightline, which were launched in Las Vegas and are now valued at over $1 billion.

SUCCESS STORIES

The Park's marquee building, Black Fire Innovation, which is named after Nevada's official gemstone, is buzzing with companies that are changing Las Vegas. Most remarkably, unlike virtually every other NSHE building constructed recently, this facility was built without a single state tax dollar – instead, the $35 million construction burden was borne by industry partners who are thrilled that Nevada now has its own Tech Park, run by UNLV and protecting our state's economic future. Black Fire Innovation is home to many Knowledge Fund-supported projects. Spinout companies like Quantum Copper have offices at Blackfire. It is also home to Zero Labs.

Zero Labs is a startup accelerator based in Las Vegas that works with founders and entrepreneurs at the earliest stages of their startups and funnels them into an aligned ecosystem of programs and services intended to support them to foundationally sound and venture-ready companies and specifically focuses on early-stage startups in Nevada and globally that are developing technology and solutions that are directly related to Nevada's current and future industries. Additionally, it attracts these startups to launch and grow their companies in Nevada. So far, Zero Labs has run three cohorts under a Knowledge Fund funded program which leverages academic resources and research and aligns with university and state economic initiatives to diversify and develop the state economy.

Photos courtesy of University of Nevada, Las Vegas

SUCCESS STORIES

Photo courtesy of University of Nevada, Reno

SUCCESS STORIES

UNR

Intelligent Mobility

The Knowledge Fund has provided funding to build applied research capacity and expertise emphasizing the industry – university engagement including introducing the concept of "Living Laboratories".

Intelligent Mobility is part of the Nevada Center for Applied Research (NCAR) which was created jointly by GOED and UNR in 2015. It follows the GOED Innovation Based Economic Development's concept of "Applied Research Centers" which provide innovation on demand services to the private sector.

With rising environmental concerns and increasing demand for safe and efficient transportation, Nevada faces the challenge of advancing mobility systems that reduce emissions, improve safety, and enhance connectivity. Developing intelligent transportation solutions is crucial to meeting these challenges and supporting sustainable growth.

Photos courtesy of University of Nevada, Reno

The Knowledge Fund has been critical in supporting the Intelligent Mobility initiative, a statewide effort coordinated by the Nevada Center for Applied Research (NCAR). Bringing together experts in autonomous systems, transportation, computer science, and social psychology, this initiative is focused on creating innovative transportation solutions. The Knowledge Fund initiated the development of "Living Laboratory" test sites in northern and southern Nevada where advanced, light-detection-and-ranging roads can communicate with connected vehicles to improve safety and mobility. These real-world test beds allow researchers to study and improve intelligent mobility systems establishing Nevada as a leader in intelligent mobility technology development opening the door to international research collaborations, including partnerships with the European Union and elsewhere.

The initiative has brought together stakeholders such as the Nevada DMV, City of Reno and major companies such as Velodyne, Proterra and DELL EMC, fostering collaborations that drive innovation.

NSF Engine Development Award – Electrification Technology Innovations

The Knowledge Fund has provided the foundation in the form of having built capacity of applied research as well as establishing effective university – private sector interactions. This enabled Nevada to be competitive in large federal opportunities under the CHIPS and Science Act.

Photo courtesy of Shutterstock.com

In 2023, the National Science Foundation (NSF) selected UNR-led Advancing the Circular Economy for Lithium Batteries as one out of only 41 NSF Engine Development Awards. This $1 million award led to the creation of Recharge Nevada, a state-wide coalition for energy innovation to advance the circular economy for lithium batteries. Recharge Nevada is a broad-based initiative that includes the NSF Engines Development Award and the EDA-funded Nevada Tech Hub, as well as numerous other federally funded research and development grants at UNR and other industry partners statewide. In August 2024, the UNR-led team, which includes GOED as a co-principal investigator, submitted a pre-application to the NSF for a full NSF Engine implementation award worth up to $160 million over 10 years. UNR through Recharge Nevada has been able to position itself to be at the cutting edge of lithium battery technology transformation, and through the NSF Engines, will be able to play a critical role in the development of circular lithium innovation ecosystem.

SUCCESS STORIES

Technology-intensive companies' engagement with Nevada Center for Applied Research

In 2015, The Knowledge Fund enabled the creation of an Applied Research Center at UNR providing a safe space and joint laboratory facilities where affiliated technology-intensive companies can develop and attract venture capital, federal grants or loan support to help them scale.

American Battery Technology Company

NCAR provides industry and entrepreneurs with access to the University's advanced facilities, equipment, and expertise. In the case of American Battery Technology Company (ABTC), the partnership is poised to advance battery metal extraction technologies from Nevada-based primary resources and technologies for the recycling of lithium-ion batteries.

The ABTC team has expanded three-fold in technical personnel as well as expanded into two new laboratory spaces and an office space. The ABTC team and UNR faculty and staff have been collaborating on government grants and developing proposals for grant solicitations. Much of the work done at NCAR has been demonstrating technologies at the bench scale and scaling up pilot scale demonstration.

In 2023, through a U.S. Department of Energy competitive grant award for a multipartner industry collaboration to demonstrate and commercialize new techniques for lithium-ion battery recycling processes to manufacture low-cost and low-environmental impact domestic critical battery materials. The DOE provided $10 million in direct funding, while ABTC and its partners contribute an additional $10 million worth of cost-share resources, bringing the total project investment to $20 million.

Photos courtesy of University of Nevada, Reno

In 2022, ABTC was awarded a $57 million contract award from the U.S. Department of Energy for a multi-year project to design, construct, and operate it's first-of-kind commercial-scale lithium hydroxide manufacturing facility for electric vehicles lithium-ion batteries in Tonopah, Nevada.

SUCCESS STORIES

Ecoatoms

Ecoatoms, Inc., a technology-intensive in the field of space-based manufacturing and affiliate of the Nevada Center for Applied Research (NCAR) – was recently named as one of the winners of the prestigious NASA TechLeap Prize. Their innovative project, the Apparatus for Nominal Integration with Minimal Adaptations (A.N.I.M.A.), has been recognized for its groundbreaking potential in space research and development. This 'system of systems' aims to become the universal payload interface for most space vehicles and payloads opening the space domain to all users.

A recent highlight for Ecoatoms was their successful deployment of a batch-manufacturing payload onboard the New Shephard Blue Origin flight in December 2023. This payload included a range of medical devices inside a payload. Some of the 3D printed items were printed at the University of Nevada, Reno Innevation Center's Makerspace. Ecoatoms specializes in creating space payloads known as 'Ecos' – custom habitats designed for manufacturing products in space.

In collaboration with members of the Ecoatoms team, NCAR developed three new laboratories – a Biosafety Level 2 (BSL-2) wet lab, a dry lab, and a prototyping lab. As an affiliate of both NCAR and the Innevation Center, Ecoatoms has leveraged these state-of-the-art facilities, resources and expertise to design and build their specialized space payloads.

The company has several planned launches for 2025 that include suborbital and orbital rockets as well as capsules launching for their NASA and Global Fortune 500 clients.

The state venture program, Battle Born Venture, under the auspices of the federal State Small Business Credit Initiative (SSBCI) has provided seed capital as part of the company's latest investment round and enabled it to attract private venture capital from institutional investors.

Photos courtesy of University of Nevada, Reno

SUCCESS STORIES

Nevada Autonomous

The Knowledge Fund has provided funding to build applied research capacity and expertise emphasizing industry – university engagement. It is part of the Nevada Center for Applied Research (NCAR) which was created jointly by GOED and UNR in 2015. NCAR follows the GOED Innovation Based Economic Development's concept of "Applied Research Centers" which provide innovation on demand services to the private sector.

As industries increasingly turn to autonomous systems such as drones and self-driving cars, Nevada has a unique opportunity to lead in the development and testing of these technologies by providing the necessary infrastructure, testing facilities, partnerships and research programs. Sectors particularly benefiting from these resources are mining, advanced manufacturing as well as transportation and logistics.

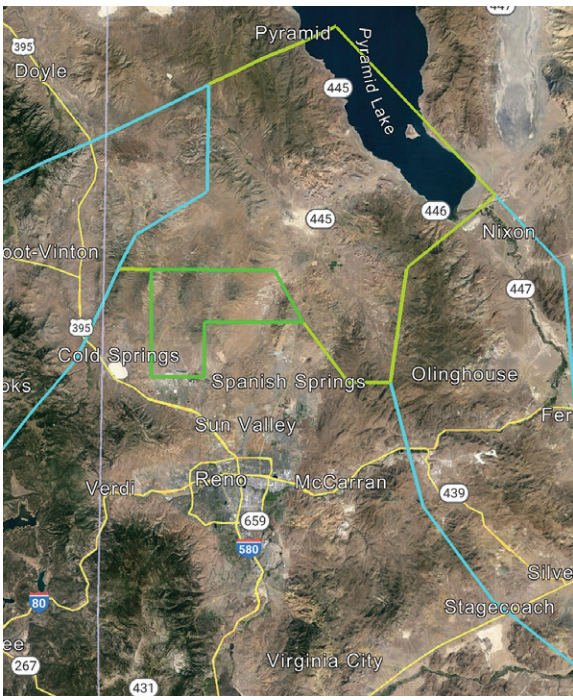


Photo courtesy of Shutterstock.com

The Knowledge Fund has been instrumental in establishing and advancing Nevada Autonomous, a program at UNR that manages the state's FAA-designated Unmanned Aircraft Systems (UAS) Test Site. Covering 1,000 square miles of FAA-approved airspace in Northern Nevada, Nevada Autonomous conducts research and development in areas such as infrastructure inspection, fire detection and mitigation, first responders, medication and other critical deliveries. The Knowledge Fund has also enabled leadership in Beyond-Visual-Line-Of-Sight (BVLOS) operations and fostered key partnerships with industries to explore underground robotics applications.

Nevada is now positioned as one of only seven FAA UAS Test Sites in the U.S. and has attracted companies like Kraus Hamdani Aerospace to relocate their operations here.

The support from the fund has created new partnerships with industries such as mining and aerospace and enabled Nevada to develop FAA-approved safety procedures and test ranges, making it a national leader in autonomous system testing. Nevada Autonomous is now spearheading efforts to create a 500-mile testing corridor from Reno to Las Vegas, further cementing the state's role in shaping the future of autonomous technology.

SUCCESS STORIES

Photo courtesy of Desert Research Institute

SUCCESS STORIES

DRI

Lake Powell

The Knowledge Fund has provided the foundation in the form of having built capacity of applied research as well as establishing effective university – private sector interactions. This enabled Nevada to be competitive in large federal opportunities under the CHIPS and Science Act.

The Colorado River is vital to Nevada and other western states, as well as Mexico. With population growth and drought both straining the Colorado River, managing every drop in the Colorado River basin matters. In addition to conservation, it is critical to account for the evaporation of Colorado River water. Evaporation is the natural process by which liquid water is converted to water vapor and accounts for significant water losses from reservoirs and lakes each year. Our understanding of the amount and variability of water lost from reservoirs through evaporation is limited.

Reservoirs like Lakes Mead, Powell, and Mohave are integral to storing water during wet periods that can later be used for agricultural, municipal, and industrial water demand. Incomplete or inaccurate information on the amount of water lost to evaporation makes long term management and planning difficult.

DRI has been studying water evaporation from Lake Powell with the aim of solving this problem by providing more accurate estimates of reservoir evaporation for all major reservoirs throughout the western U.S. Currently, their work leverages field data-sets collected via buoys and floating weather stations with advanced hydrometeorological modeling to generate historical and current estimates of evaporation for improved water management.

Photo courtesy of Shutterstock.com

Although existing research has provided essential data, obtaining water temperature imagery across a reservoir at the necessary resolution has been a critical missing data piece. Now, DRI is part of the National Science Foundation Southwest Sustainability Innovation Engine (SWSIE), which aims to elevate the Southwest as a regional hub of economic development catalyzed by innovations in water security, carbon capture, and renewable energy. DRI, through SWSIE, is working with remote sensing startup Hydrosat to fill this critical data gap.

On August 16, 2024, Hydrosat successfully launched a satellite to deliver high-resolution thermal imaging technology which can precisely measure surface temperatures at an impressive 20-meter resolution. DRI will use the Hydrosat data of Lake Powell, and existing research, to test our models against it. Hydrosat will launch more satellites, building a constellation to eventually provide daily temperature reading coverage across the Colorado River reservoirs.

This is a groundbreaking development that is expected to revolutionize our ability to measure evaporation, thanks to the significant improvement it will bring about.

WaterStart

The Knowledge Fund created the Water Center of Excellence which developed into WaterStart, a 501(c)6 non-profit entity and spun out of DRI. The Knowledge Fund provided funding for staffing as well as establishing effective university – private sector interactions.

WaterStart (formerly known as the Water Center of Excellence) launched in 2013 via a partnership between DRI, the Southern Nevada Water Authority (SNWA), and GOED. WaterStart successfully spun out of DRI and is a non-profit association of globally recognized leaders who are adapting to change by scaling up new solutions to water challenges.

WaterStart's technology priorities identified by a global utility membership continue to grow and include priorities related to building resilient water treatment and delivery systems in the face of climate change. Since inception, WaterStart has funded/facilitated 49 pilot projects of new technologies demonstrating actual solutions to some of the most pressing challenges. WaterStart evaluated 450 water technologies, and its members have invested over $4.5 million in new solutions.

Photo courtesy of WaterStart

SUCCESS STORIES

More recently, WaterStart, in partnership with SRI International, was tasked by GOED to develop a waterwise economic framework which will help align economic development and water resource incentives and policies. To inform this framework, WaterStart and SRI organized a series of focus groups with state and regional leaders from across a variety of sectors in the state of Nevada. In addition to stakeholder engagement, WaterStart, through GOED, has established a pilot fund for evaluating new, water-efficient, technologies that can potentially be incentivized if vetted and proven. The first project funded through the WaterWise program was the evaluation of an atmospheric water generator (AWG) in partnership with the Las Vegas Grand Prix, MGM Grand Resorts, the SNWA, and WaterStart. The study aimed to assess the efficiency improvement of AWG production when using exhaust air from a cooling tower. If significant, this technology could serve as a viable makeup water source for evaporative cooling towers, reducing their water consumption.

Population Health

The Knowledge Fund created the Applied Innovation Center providing capacity building through staffing and equipment funding.

The Healthy Nevada Project genetic research program began in 2016 as a partnership between DRI and Renown's Institute for Health Innovation with support from the Knowledge Fund.

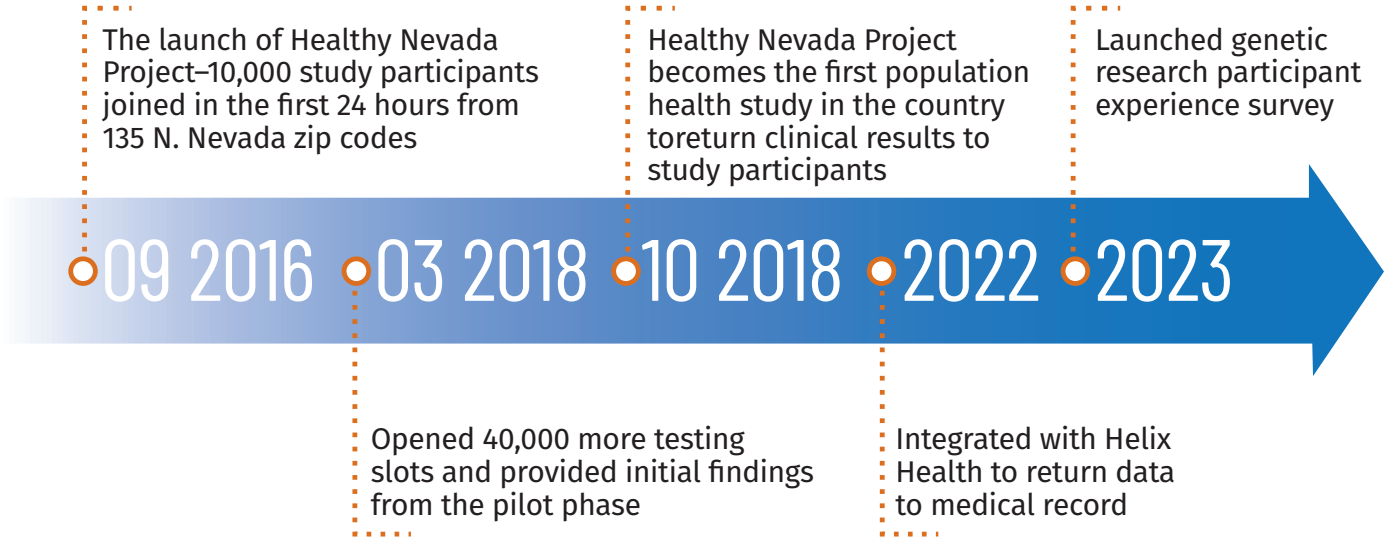
The program initiated a population health study that examined genetic and environmental risks for certain diseases among Nevadans. With more than 60,000 Nevadans enrolled, the Healthy Nevada Project is one of the largest population health studies in the country and one of the first population health studies in the country to provide results to participants, allowing them to discuss with their physician ways that they can lower their risks of developing certain diseases.

The Healthy Nevada Project spun out of DRI and is operated by the Renown Institute for Health Innovation (Renown IHI). Renown IHI research project funding includes a large liver disease study in collaboration with Gilead Sciences and Siemens. Together, DRI and Renown IHI have received more than $50 million in combined research funding as a result of the Knowledge Fund investment.

The Healthy Nevada Project study offers ancestry information and no-cost genetic screening for certain hereditary cancers and heart disease risks that are often missed in routine clinical care alone. This includes screening for the following genetic risks associated with:

- Familial Hypercholesterolemia (FH): Increased risk for early heart disease and high cholesterol.
- Breast & Ovarian Cancer Syndrome (BRCA 1&2 genes): Increased risk for Breast, Ovarian, Prostate, and Pancreatic cancers.
- Lynch Syndrome: Increased risk for colon and endometrial cancers as an added benefit.

PROJECT EXPANSION & EVOLUTION



The program and its applied research have grown significantly for the health benefits of Nevadans and a partnership with the University of Nevada, Reno was announced in February 2023. This will expand opportunities for undergraduate students, medical students, and residents, and will enable clinical integration to support population-based health strategies and outcomes. This will help contribute to medicine and our knowledge of how genetics plays a role in health. Nevada's personal health data continues to be protected, and the study operations will continue as defined in the research consent form.

NSF ENGINES AND EDA TECH HUB

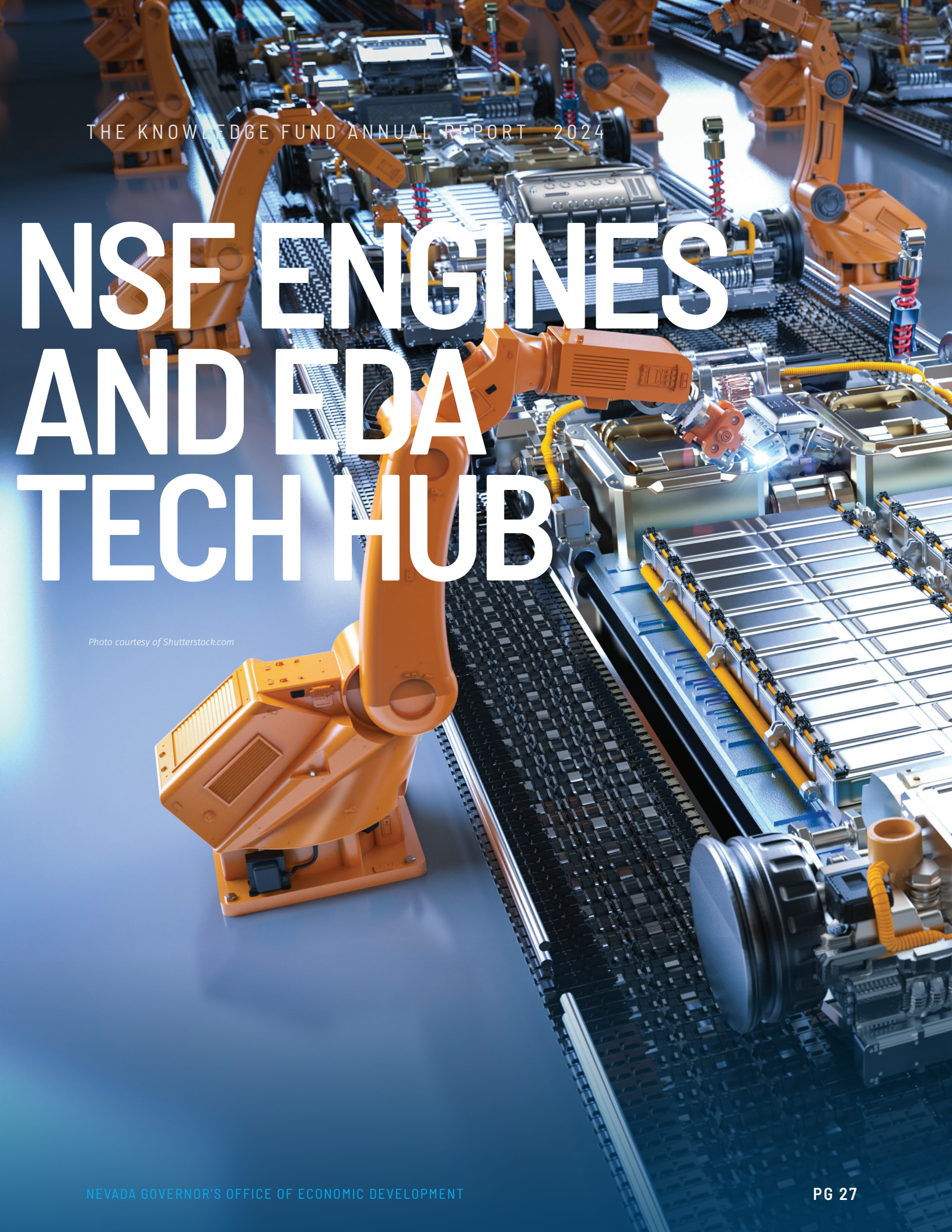


Photo courtesy of Shutterstock.com

NSF Engines and EDA Tech Hub

Following the creation of the National Science Foundation new Directorate for Technology, Innovation and Partnerships (TIP) – the first one in more than 30 years – under the CHIPS and Science Act of 2022, the newly established NSF Engines mark a tectonic shift from the traditional pure research focus to "use- inspired and translational" applied research.

The NSF Engines represent a generational opportunity for Nevada, not witnessed in decades, to build fully functioning innovation economies in key technology areas of the future particularly in new energy innovations. Nevada's Engines will result in not only the state being at the forefront of new leading technologies for the 21st century, but new high-wage jobs in science, technology, engineering and math (STEM) for Nevadans.

Nevada is home to TWO main NSF Engines projects: The inaugurally awarded Southwest Sustainability Innovation Engine (SWSIE) and the Development Award and 'full-application in progress' Recharge Nevada – A Coalition for Energy Innovation. Recharge Nevada is a state-wide initiative to collaboratively build an innovation ecosystem around the lifecycle of lithium batteries. Nevada has the natural resources, industrial base, and research capacity to develop a first-of-its-kind lithium circular economy that meets the nation's clean energy storage needs now and into the future. Nevada has innovative and cutting-edge workforce development programs at all levels, supports world-renowned research labs, and is home to entrepreneurial and industrial activity in the entire lifecycle of lithium batteries, from resource extraction, to processing, to battery development, reuse and recycling.

TECH HUBS
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Recharge Nevada
A Coalition for Energy Innovation

SWSIE

Recharge Nevada is the coalition that engages stakeholders across the entire "circular lithium economy" to coordinate and align initiatives for maximum impact.

Recharge Nevada was initially funded by the National Science Foundation Engines award number 2305697, "Advancing the circular economy for lithium batteries (NV)." This grant provided the University of Nevada, Reno with $1 million for 24-months of activities to engage with stakeholders and form partnerships that build the region's capacity for innovation and entrepreneurial activity.

NSF ENGINES AND EDA TECH HUB

UNR with GOED as Co-PI was awarded an NSF Engines Development Award in May 2023. In October 2024, the project was selected as one out of only 71 to submit a full application for an NSF Innovation Engine by February 11, 2025.

Recharge Nevada is also comprised of the U.S. Economic Development Administration's (EDA) Tech Hub, which was awarded to the UNR's University Center for Economic Development after Nevada was designated an EDA Tech Hub.

The Southwest Sustainability Innovation Engine (Arizona, Nevada and Utah), SWSIE, led by Arizona State University, aims to equitably transform water security, renewable energy and net carbon emissions in the region by incentivizing new technology and governance, expanding infrastructure and capacity for knowledge translation, and preparing a diverse and highly skilled workforce.

The effects of climate change are acutely evident in the American West and Southwest, from the desertification of Utah's Great Salt Lake to the record-breaking extreme heat in Arizona and the dwindling supply of the Colorado River reaching Nevada. SWSIE will use these challenges to catalyze economic opportunity.

Led by Arizona State University and supported by core academic partners from throughout the region, SWSIE aims to establish the Southwest as a leader in carbon capture, water security, and renewable energy and bring high-wage industries to the region. SWSIE unites academic, community, nonprofit and industry partners across Arizona, Nevada and Utah who are committed to this goal.

Both DRI and UNLV will serve as core academic partners on the project, leading and/or contributing to project management and water innovation, workforce development, and community development teams.

SWSIE is among the first proposals selected by the NSF to establish a Regional Innovation Engine, a first-of- its-kind NSF program to create focused research and technology transfer hubs. The NSF will fund SWSIE's initial development and growth with $15 million over the next two years. The engine can be renewed for up to 10 years with $160 million in funding available for each Regional Engine. If all tranches of funding are awarded it is expected that Nevada will receive an approximate $50Mshare.

SAGE PROGRAM+ FEDERAL GRANT ATTRACTION

Photo courtesy of Shutterstock.com

Sierra Accelerator for Growth & Entrepreneurship, SAGE

The Knowledge Fund expanded the originally UNR-based and federally funded program Nevada-wide through the partnership with both UNR and UNLV. As federal funding sunset, the Knowledge Fund is the program's sole funding source. Further expansion of the program was enabled by the Knowledge Fund in 2024 by providing compulsory cash match for a successful SBA FAST (Federal And State Technology Partnership Program) adding important elements to the program's support offerings.

SAGE helps technology entrepreneurs secure competitive grant funding from the U.S. Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, which are often referred to as "Americas Seed Fund". It is a statewide program offered through the University of Nevada, Reno and the University of Nevada, Las Vegas. The SAGE program is open to for-profit, Nevada-based small businesses focused on technology-driven research and development aimed at creating commercialized products.

How SAGE Works:
Once the business applies, the SAGE team will get in touch to set up an initial discovery meeting to determine fit for the program. Once established, the SAGE team will provide guidance through the process: i. initial consultation & assessment, ii. strategic discussion & research, iii. grant application support.

SAGE services include:

- Guidance & Support- Gain access to experienced consultants and receive introductions to key agency program managers.
- Proposal & Grant Writing Support- Receive assistance with grant writing, Technical and Business Assistance (TABA) proposals, and solicitation matching for the small technology-based business.
- Resource Library-Utilize to a comprehensive library of resources, tools, and links to effectively navigate the proposal and reward process.
- Forthcoming as part of new FAST grant- i. Speaker Series, ii. NSF Project Pitch Support, iii. SBIR/STTR Proposal Accelerator.
- Forthcoming as part of new FAST grant- Phase 0 Microgrants for small technology-based businesses actively developing a proposal.

SAGE's efforts have led to a significant increase in SBIR and STTR awards for Nevada, with 23 awards made in 2023, compared to 10 in 2022 and 12 in 2021. With support provided through the FAST expansion, Nevada will continue to see these numbers climb. **SAGE has assisted 145 Nevada small businesses since its inception in 2020.**

Knowledge Fund catalyzing federal funds into Nevada – Highlights

- UNLV's Nevada Institute for Personalized Medicine (NIPM) received a total $11.4M over a period from 2018 – 2023 from the National Institute of Health (NIH).
- UNR NCAR affiliated company American Battery Technology Company receiving a total of $66 million in grant from the US Department of Energy in 2022.
- The University of Nevada Reno (UNR) received an $1 million NSF Engines Development Award and will submit for a full NSF Engine (up to $160 million).
- The University of Nevada Reno (UNR) was selected as an EDA Tech Hub Designee and has received a $22 million Phase 2 award in 2024.
- The University of Nevada Las Vegas (UNLV) won two EDA Build to Scale (B2S) awards with the Knowledge Fund providing cash match in 2023.
- In 2023, the University of Nevada Las Vegas (UNLV) and the Desert Research Institute (DRI) are both members of the Arizona State University (ASU) led NSF Engine which was selected as one of the first-ever NSF Regional Innovation Engines, awarding 10 teams spanning 18 states. Up to $50 million is expected to come into Nevada over 10 years if all funding stages are reached.
- The University of Nevada Las Vegas (UNLV) winning SBA FAST with the Knowledge Fund providing cash match in 2024.

SUMMARIES OF ACTIVE PROJECTS

Summaries of Active Projects

A. Applied Innovation Collaboration (UNLV) – formerly Applied Research Collaborative

Project Inception: **July 2023 (October 2021, Applied Research Collaborative)**
Total Funds Awarded (all years): **$3,458,679.88**
Project Status: **Current Project**
Contract End Date: **June 30, 2025**

This collaborative initiative will emphasize research, development, and entrepreneurship as key drivers of Nevada's economic development and diversification. Additionally, it will increase Nevada's visibility as a worldwide hub for technology and innovation, company attraction and collaboration, and workforce development. The UNLV Applied Research Collaborative (ARC) officially ended on June 30, 2023 and transitioned into the Applied Innovation Collaboration (AIC), starting July 1, 2023.

The objectives of this project are as follows:

- Establish collaborative relationships between UNLV and industry to promote innovation, applied research and development programs, entrepreneurial education, startup formation, workforce development, and increased unification of messaging and access to programs and services that will increase the number and kind of mutually beneficial industry engagements.
- In collaboration with UNLV, connect industry partners with governmental agencies and UNLV assets to promote pilot programs, research initiatives, and other collaborations.
- Facilitate access to cutting-edge research labs, incubators, and accelerators in a way that develops and diversifies the economy while providing students and faculty with real-world access to data, expertise, and startup support.
- Build interdisciplinary teams of faculty, scientists, postdoctoral students, and grad students to solve industry problems.
- Provide access to an innovation ecosystem that includes incubation, acceleration, and business mentoring at the Office of Economic Development, specifically their UNLV Incubator, UNLV's Black Fire Innovation accelerator, Troesch Center for Innovation and Entrepreneurship, and the Small Business Development Center (SBDC).
- Provide co-working space for Nevada's university communities and local startups, leveraging world-class facilities at the Harry Reid Research and Technology Park.
- Research that helps to quantify the benefits of partnerships between the university and the private sector (such as cost-benefit analyses, forecasts, and market research).

- Marketing and public interface for the Center's outreach.
- Leveraging the Troesch Center for Innovation and Entrepreneurship to support businesses that may emerge from these collaborative efforts.

UNLV Office of Economic Development and Technology Transfer & IP Commercialization

- Ensuring university-wide collaboration and participation supported by the UNLV Office of the President.
- Enhancing, facilitating, and executing contract negotiations between clients and the university.
- Providing "outward facing" support via its new UNLV Incubator, Black Fire Innovation, Industry Engagement, and Technology Commercialization offices.
- Acting as a conduit between GOED and other state agencies when necessary.
- Overseeing the development of private and university collaborations.
- Cataloging existing IP and create a marketplace where students, faculty and the wider community can apply to license and/or commercialize the UNLV IP portfolio.

ASPIRE

ASPIRE is a co-creation between GOED, UNLV and Rainmaking, a global venture builder, that was developed in response to the COVID19 pandemic and provides a means for organizations and individuals to upskill and reskill themselves to solve big challenges and unlock new revenue opportunities through entrepreneurship.

ASPIRE programs are the codification of Rainmaking's 14 years' worth of experience, skills and knowledge in helping to build and support the acceleration of 1000+ successful ventures, made available to enable partners and their people to create successful products and services faster. ASPIRE is delivered through a blended model, using digital learning via their platform combined with real time mentorship from subject matter experts, community managers and experienced startup and growth coaches. ASPIRE has two main programs, each of which enables Rainmaking to "meet" the participants where they are in their innovation cycle.

Rainmaking and UNLV's Black Fire Innovation Hub ran a successful 'Co lab' program, which for this project will be developed into a deeper partnership to help drive entrepreneurship across the UNLV community and throughout Nevada to develop, test, and launch new ideas into the market.

Highlights for the Reporting Period:

- UNLV and DRI are both members of the Arizona State University-led NSF Southwest Sustainability Innovation Engine (SWSIE), which also includes the University of Utah, and which was selected as one of the first-ever NSF Regional Innovation Engines, awarding 10 teams spanning 18 states.
- UNLV won two EDA Build to Scale (B2S) awards with the Knowledge Fund providing cash match.
- ASPIRE and EIR programs were instrumental in the formation of water-vapor-from-air-capture technology spinout company WAVR.
- More than 50 startups participated across ZERO Labs' accelerator program between January and October 2024. The potential economic impact from 100 new ZERO Lab startups would be 6,900 total jobs, $500M in annual labor income, and $840M in annual GDP over the lifetime of the startups according to modeling performed by The Innovation Group.

B. Anchoring a Commercialization Ecosystem for Environmental Technologies and Know-How (DRI)

Project Inception: **October 2021**
Total Funds Awarded (all years): **$2,688,259.15**
Project Status: **Current Project**
Contract End Date: **June 30, 2025**

This project aims to create an ecosystem at DRI where there is ongoing opportunity for faculty to nurture any ideas that have the potential to contribute to economic development, an understanding of the different paths to commercial viability, and an accounting of the resources available to bring to bear in pursuit of such success. This ecosystem framework is intended to reflect DRI's existing "bottom-up" culture.

The project consists of two components:

1. A program of progressive education and training for groups of DRI faculty and staff (Commercialization Fellowship). Short workshop-type interactions provide for a broad range of faculty and staff in order to raise the level of sophistication across the board with respect to technology transfer and commercialization. One or two dozen faculty-driven ideas are selected through a competition for further refinement in more focused workshops and one-on-one mentoring and further winnowed through meeting of milestones and other factors to a handful of project ideas that will be developed more intensively by the faculty members, office of the Vice President of Research, and outside resources to include other Nevada System of Higher Education (NSHE) institutions, regional non-profit organizations, and out-of-state direction and mentoring as needed.

This component also entails the encouragement and support for obtaining funding through federal Small Business Innovative Research (SBIR) and Small Technology Transfer Research (STTR) federal programs. Through a matching program enabled by this project, DRI aims to incentivize faculty to participate more fully in obtaining and using SBIR/STTR program funds. Although the sectors of interest are not limited intentionally, due to the nature of DRI research it is likely that the technologies introduced into the project frequently have a strong environmental or climate component.

2. An effort to identify and pursue targeted research and development activities in areas of competitive advantage and strategic alignment with DRI's expertise. This entails a more proactive investment in the development of technologies and services in areas that are related to climate science and technologies where there is likely to be both federal and private investment as well as disruptive technical breakthroughs over the next decade. Under the broad umbrella of climate science, there is substantial opportunity for DRI to harness expertise specifically in data science, forecasting, science communication, the intersection of the environment with human health, and working regularly with stakeholders of varying backgrounds and to leverage this expertise into novel technologies, services, and revenue streams to the benefit of Nevada. If the commercialization ecosystem (see 1. above) that was started in FY22 and FY23 represents a "bottom-up" approach that empowers researchers to find a path to market for their innovation, then the expansion of this project in the current FY24-25 biennium DRI aims to add, in parallel, a "top-down" investment that is deliberately targeted at where it expects, and wants to encourage, considerable growth. Due to limited resources not every potential productive path can be pursued, and specific initiatives will have to be prioritized following a period of discovery and analysis.

Highlights for the Reporting Period:

- DRI and UNLV are both members of the Arizona State University-led NSF Southwest Sustainability Innovation Engine (SWSIE), which also includes the University of Utah, and which was selected as one of the first-ever NSF Regional Innovation Engines, awarding 10 teams spanning 18 states.
- As a SWSIE "shovel-ready project" space technology firm Hydrosat launched satellites providing 20-times the resolution of existing Landsat, which will enable DRI researchers to use the images for accurately estimating water evaporation from critical reservoirs along the Colorado River.
- U.S. Department of Energy awarded $1.6M to map nature and lithium resources in Nevada.

C. Nevada Center for Applied Research (UNR)

Project Inception: **October 2015**
Total Funds Awarded (all years): **$9,313,236.41**
Project Status: **Current Project**
Contract End Date: **June 30, 2025**

The Nevada Center for Applied Research (NCAR) is a stand-alone, fully functional applied research and development technology center that serves to enhance the global competitiveness of Nevada industry by leveraging the physical and intellectual assets of UNR. NCAR's mission is to stimulate regional innovation-based economic development (IBED) by aligning the needs of industry, startup companies, researchers, and entrepreneurs with resources at UNR. This is achieved through:

i. Establish collaborative relationships between industry and academia that promote open innovation research programs and scientific studies to address real-world problems.

ii. Facilitate industry access to cutting-edge shared research laboratories and sophisticated instrumentation and equipment.

iii. Build an interdisciplinary team of faculty, scientists, postdoctoral students, and grad students to work on ongoing or one-off projects, or new-complex developments.

iv. Provide access to an entrepreneurs' support network that includes incubation and business mentoring from experienced entrepreneurs and executives.

v. Provide reduced cost co-working space available to the University community and local startups.

The goal of NCAR for the current biennium FY24-25 is to develop new and enhance existing programs that provide industry with a broad range of technical services, intellectual capital, testing and research capabilities, advanced tools and methodologies in Science and Engineering.

NCAR is comprised of several key initiatives:

Intelligent Mobility Initiative

Intelligent Mobility tests synchronized mobility concepts in complex and real-world urban, suburban, and rural environments. In these Nevada Living Labs, researchers and partners are refining technologies and collecting data aimed at making transportation more efficient, sustainable, and safe. This pioneering effort builds on the expertise of a multidisciplinary group of university researchers in advanced autonomous systems, computer science and information technology, synchronized transportation, robotics, geography, social psychology and judicial studies. Joining the University team is a coalition of public and private stakeholders, actively participating in research and development. From governmental organizations to global brands, the coalition brings an impressive breadth of expertise and global perspective to Intelligent Mobility.

Biotechnology Incubator

Through NCAR, industry, scientists and entrepreneurs can access an extensive array of biotechnology-focused core labs and research facilities, that otherwise may be cost prohibitive or not easily accessible to the public. These cutting-edge services and high-end instrumentation are located across the University campus, with many conveniently based at the Applied Research Facility. During the past two years, NCAR has created additional biotech-focused labs to make this incubator more attractive to industry, scientists, and entrepreneurs. During the reporting period, two additional wet labs were remodeled and the labs have been so successful that full capacity has been reached, and NCAR is now exploring additional spaces on and off campus to keep up with demand.

Advanced Autonomous Systems

With this initiative, NCAR works with faculty, staff, and students at the University to develop technology related to robotics, artificial intelligence, and autonomous system. NCAR also works with the business community in Nevada to design, deploy and evaluate new technology for the benefit of the state economy and community. The initiative is dedicated to partnering with industry to commercialize technologies in autonomous systems. To this end, NCAR has created additional robotic-focused labs to facilitate these activities that include an Autonomous Robot Arena, an Autonomous Car as well as an Advance Robotics/Autonomous Lab.

Nevada Autonomous

UNR Nevada Autonomous (UNR/NA) has taken a deliberate and effective approach to restarting the Nevada Unmanned Aircraft Systems (UAS) Test Site after assuming those duties in 2022. Since GOED transferred the Test Site operation to UNR/NA from the Nevada Institute for Autonomous Systems (NIAS), UNR/NA has been working with the FAA, all other US Test Sites, the Reno/Tahoe Airport Authority, the Nevada National Security Site (NNSS) and several industry partners, to create a new identity for the Nevada UAS Test Site, nurturing government-industry and academic collaboration by creating projects, partnerships and workforce development programs. This will open doors for UAS testing and engaging companies to make the state of Nevada as the go to place for their UAS activities.

International Research and Industry Collaborations

NCAR has been a US partner for a European Union (EU) consortium (Germany, Austria, Czech Republic, France, Sweden, and Spain), which was awarded a Horizon 2020 grant. A new proposal is being developed with this consortium (Cynergy4MIE). Furthermore, a memorandum of understanding for research collaboration with Seoul National University in in place (its Global R&DB Center) as well as a working MOU with the Israeli Innovation Authority. NCAR will continue to work with GOED on international Trade Mission opportunities for the purpose of engaging international companies and academic institutions on collaboration projects benefiting Nevada.

Highlights for the Reporting Period:

- UNR received a $1 million NSF Engines Development Award to prepare for the submission of a full NSF Engine (up to $160 million) and was selected as an EDA Tech Hub Designee followed by a $22 million Phase 2 award in 2024.
- NCAR, which took over the FAA-designated Nevada Unmanned Aerial Systems Test Site, has engaged with more than 50 companies looking to do business in Nevada.
- Six new affiliated companies were onboarded creating a total of 61 new jobs. Thirty-three affiliated companies are working on campus, and 67 companies and entities have performed one or more types of fee-for-service or facility use agreements with UNR laboratories, faculty members and students.

D. Sierra Accelerator for Growth and Entrepreneurship (SAGE) – formerly part of UNR's NCAR and UNLV' AIC projects

Project Inception: **July 2023**
Total Funds Awarded: **$372,239.92**
Project Status: **Current Project**
Contract End Date: **June 30, 2025**

The SAGE Program is aimed at supporting technology-based economic development by providing federal R&D grant support services to Nevada businesses, innovators, and entrepreneurs. This program will focus on federally funded SBIR and STTR grants administered by the SBA. SBIR and STTR grants are the "America's Seed Fund," designed to help tech-based small businesses to commercialize innovative technologies.

Nevada consistently ranks low among all states for successful SBIR and STTR awards. For example, in 2022, Nevada secured only 10 awards vs. Utah with 91 awards, and of 10 awards only 4 were for Phase II vs. Utah with 34 Phase II awards. Through targeted programming and resources, SAGE aims to increase both the number of applicants and the number of successful awards to the state. This is a statewide program to help advance small businesses engaged in technological innovation that have a business operation in Nevada and entrepreneurs building a technology-based startup in Nevada.

While the SAGE Team will be based at UNR, the SAGE Team will collaborate with UNLV and DRI to connect faculty/researchers in all three institutions and community entrepreneurs statewide to SBIR/STTR funding opportunities and grant support.

The startup community in Nevada, especially those R&D-based businesses and university faculty, are often unaware of federal programs such as SBIR/STTR grants that could help translate their R&D into commercially viable products and jump start their technology businesses. This is especially true for underserved entrepreneurs.

SAGE will target programs to support underserved entrepreneurs and businesses to increase their participation in the technology sectors and will leverage programs specifically for businesses in SBA Hub Zones and Opportunity Zones.

Programming and Services. SAGE will consist of targeted events in marketing, proposal development, business development and grant proposal support. Workshops will be offered periodically over the course of the program period and will include networking events with mentors, speakers, university faculty, and community entrepreneurs. Individual one-on-one sessions for grant and technical support will be offered by appointment, and will be promoted through email campaigns, partner organizations, and the SAGE website.

SAGE services include basic SBIR/STTR training via the proven TurboSBIR platform and workshops, setting up entities and required registration to receive federal grants (e.g., SAM.gov), proposal development and technical support, assistance with grant budget development, and if feasible, more tailored proposal development and review by grant experts.

Proposal Development and Technical Support. This is the most intensive and time-consuming stage. SAGE works with each client to 1) develop a responsive proposal, 2) provide the technical assistance/support needed for the client to complete all registrations and documentation required for proposal submission, 3) determine business development and technical needs, and 4) facilitate any necessary partnering, contracting or sub-contracting, and research collaborations. The SAGE team will consult external sources to ensure that suitable advice or subject matter expertise is given to the respective company applying for the SBIR/ STTR grants. The goal of matching the best technology expertise with companies may entail the creation of a "SBIR Advisory Board" composed of representatives from all three NSHE institutions, SAGE team leader, and external experts.

SAGE had been part of both UNR's NCAR and UNLV's AIC, but due to the importance of SBIR/ STTR to the state it will be given its own dedicated project status as well as adding DRI to now cover all three research institutions. During the reporting period a total of 16 small tech-based businesses received SAGE support for SBIR/ STTR applications. The expectation is that this project will expand over time.

Highlights for the Reporting Period:

- The U.S. SBA for the first time since 2019 awarded a FAST Partnership Program grant which is building upon existing SAGE assets and adding vital new service offerings such as a dedicated accelerator program and micro-grants for technology-based small businesses applying for SBIR/STTR grants or contracts.
- SAGE has assisted 145 Nevada small businesses since its inception in 2020.
- Northern Nevada 97 (SAGE started first in northern NV before expanding statewide).
- Southern Nevada 48.

E. EDA Build to Scale (B2S) Grant Matching (UNLV)

Project Inception: **May 2024**
Total Funds Awarded: **$500,000**
Project Status: **New Project**
Contract End Date: **April 30, 2027**

This project provides matching dollars for the EDA Build to Scale grant award to the UNLV, Project Name "Accelerate Electric Nevada Renewable Energy Cluster Development", as portion of the Nevada match of $750,121 for the federal share of $749,037.

NRS 231.1597 authorized uses of allocations from the Knowledge Account for matching funds for federal and private sector grants and contract opportunities that support economic development consistent with the State Plan for Economic Development developed by the Executive Director pursuant to subsection 2 of NRS 231.053.

Funding will leverage the expertise, available funding, and networking capabilities of gener8tor, a nationally-ranked venture capital firm and accelerator to maximize outcomes that otherwise would not be available to start-ups in Nevada. Gener8tor will leverage their network and ecosystem to broaden the available resources to start-ups and ensure their success resulting in monetary wins that will help to sustain the Accelerate Electric Nevada Program beyond the funding period. Gener8tor will work closely with the Governor's Office of Economic Development state-sponsored Venture Capital Program (Battle Born Growth Venture) will provide investment capital to cohort companies.