



TRGR

TECHNOLOGY READINESS INITIATIVE

PROGRESS REPORT

FISCAL YEAR
2022

14 PROJECTS

12 CRADAS
LICENSES

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Activities since the inception of the TRGR Program in July of 2020.

Alicia J. Keyes
Cabinet Secretary

Economic Development
Department
State of New Mexico



“New Mexico is the only state with two Department of Energy research labs. The TRGR Technology Readiness Initiative can provide New Mexico businesses with an unmatched opportunity to tap into scientific expertise, and use this collaboration to push ideas and products into the marketplace.”

“We were pleased to be able to work with legislators and New Mexico’s two national laboratories to extend and improve administration of the TRGR Technology Readiness Initiative in the 2022 regular session of the Legislature. The credit is an important tool that helps facilitate the labs’ assistance to New Mexico businesses, ultimately diversifying our economy and increasing our tax base.”



Stephanie Schardin Clarke
Cabinet Secretary

Taxation and Revenue
Department
State of New Mexico

Dear Governor Lujan Grisham and New Mexico State Legislators,

We are pleased to present the first progress report for the New Mexico TRGR Technology Readiness Initiative. A startup program itself, the TRGR Initiative was enacted by the New Mexico State Legislature in 2020 to help New Mexico businesses mature laboratory-developed technologies to a market-ready stage and drive technology transition from our national labs to stimulate start-ups and attract high tech jobs and capital to New Mexico.

New Mexico businesses that have licensed technology from Sandia National Laboratories or Los Alamos National Laboratory, or are engaged in a Cooperative Research and Development Agreement (CRADA), may receive up to \$150,000 in technical assistance to further mature the technology into a product or service. Laboratory work can include prototyping, developing proof of concept, and validation of technology.

Technology transition out of a federal laboratory requires significant work and funding to validate the technology before it can enter the market. Through the TRGR Initiative, businesses are leveraging national laboratory research, capabilities, and expertise to mature laboratory-developed technology and create advanced products. TRGR enables New Mexico companies to fast-track growth and scale up by accelerating the development of their product vision and moving the product to manufacturing.

To date, TRGR has helped twelve New Mexico companies develop prototypes, validate technology, raise investment and bring new products to the market. This report highlights the early successes and impacts New Mexico companies are having in maturing their early-stage technology with help from the national laboratories:

- Sandia helped a company scale their production. This company was then able to enter a \$6.5 million series-A funding round.
- Los Alamos validated a company’s hydrogen fuel cell catalyst. This validation expanded the company’s customer base and, as a result, the company hired an additional six New Mexicans.

Sandia and Los Alamos national laboratories, with the support of the New Mexico Economic Development Department, have numerous programs that provide New Mexico small businesses with access to expertise, equipment, and scientific brain power not available to businesses outside of the state. To this end, we encourage all business people in New Mexico to get involved with our robust start-up scene, as an investor, a supporter, or a mentor. Together, we will build the state’s economic ecosystem to create more jobs and diversity of jobs for families and future generations of New Mexicans.

David Kistin
Sandia National Laboratories

Mariann Johnston
Los Alamos National Laboratory

PROGRAM OVERVIEW

For years, the State of New Mexico sought additional ways to leverage the research and technology at Sandia National Laboratories and Los Alamos National Laboratory to spur innovation, create and expand regional businesses, and increase economic wealth. In 2020, the two national laboratories, in partnership with the State of New Mexico, created the TRGR Technology Readiness Initiative to address the significant capital investment and research and development effort required to mature technology to a place where it is market ready.

The TRGR Initiative is a mechanism enabling the labs to foster the successful transition of laboratory technologies to New Mexico companies so they can produce high value goods and services that grow the technology-based economy. By participating in TRGR, companies can accelerate the maturation of laboratory-developed technologies, decrease time to market, and increase scalability.

Funded through the Technology Readiness Gross Receipts Tax credit, TRGR gives New Mexico businesses access to research and technology development services from Sandia and Los Alamos national laboratories to expedite product development. To be eligible for TRGR assistance, New Mexico businesses must have a license for a laboratory technology or be engaged in a Cooperative Research and Development Agreement (CRADA).

Eligible New Mexico businesses can work alongside a national laboratory researcher to advance their technology towards a commercialization milestone, with funding up to \$150,000 per year. For the duration of the partnership, national laboratory research staff will work on behalf of the business to mature

products through prototyping, proof of concept, and technical validation, among other approved activities. TRGR provides unique work not available in the private sector. Funding for each laboratory is capped at \$1 million per year.

Fundamentally, the TRGR Initiative helps ease the path to market, enabling these New Mexico companies to grow in the state. As TRGR continues to expand, we look forward to furthering the state's high-technology economy by supporting efforts at the early stage of product maturation and development. The companies that have used the TRGR Initiative to mature technology are concentrated in aerospace, sustainable and green energy, biosciences, and cyber security.



Jump-start product development with testing and evaluation

Validate and de-risk technology to increase investor interest

Access advanced demonstration services and prototyping for new product launch, market entry, and scaling for manufacturing purposes



Advanced & Intelligent Manufacturing



Aerospace



Biosciences/
Biotechnology



Cyber Security



Sustainable & Renewable (Green) Energy



Sustainable Agriculture & Water

EDEN RADIOISOTOPES

Agreement Type: License



Ed Parma
Chief Science Officer

John Garcia
Laboratory Supervisor

Krystal Harlow
Support Director

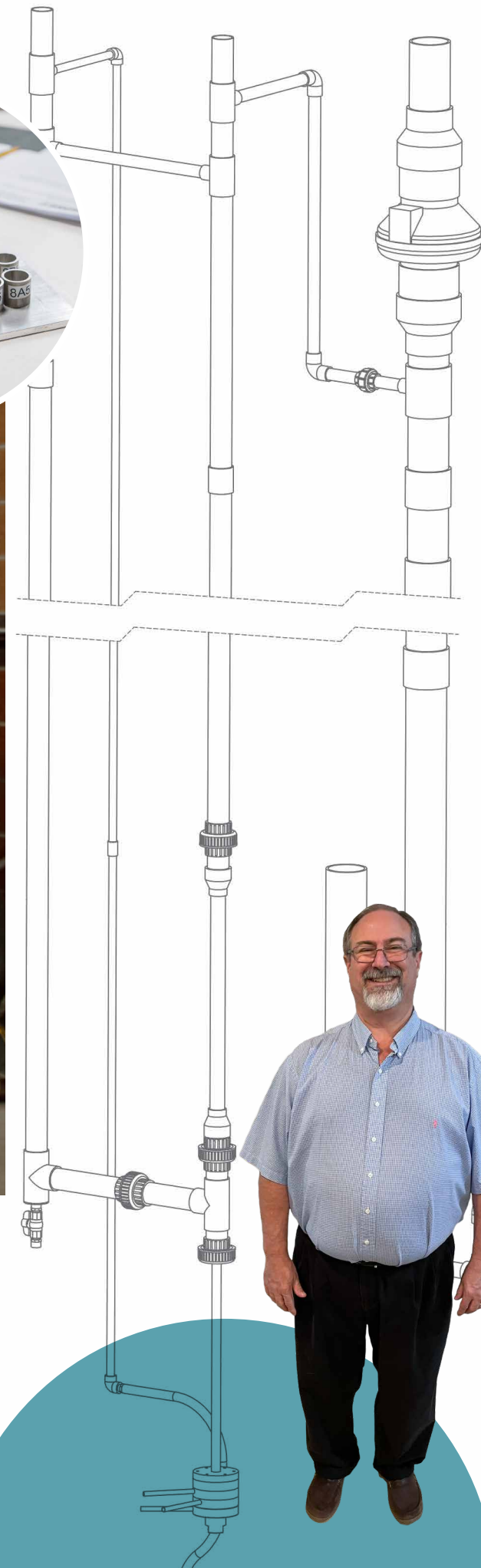
Paul Schlavin
Facility Engineering Director

Miguel Leyba
Electrical Engineer

Paul Helmick
Nuclear Engineering Director

“We have a lot of moving parts and technical engineering challenges. TRGR helped us move into the next stage of development with the confidence that our technology is going to work.”

Chris Wagner
CEO, Eden Radioisotopes, LLC



Eden Radioisotopes is a startup creating a small commercial reactor and hot cell facility to produce medical isotopes. Their primary product will be Molybdenum-99. Its daughter isotope, Technetium-99m, is the most widely used radioisotope in nuclear medicine diagnostics.

The original reactor design was developed by and licensed from Sandia National Laboratories. The company's next steps are to finalize the design and safety documentation for the facility. The reactor and its novel fuel must be approved by the U.S. Nuclear Regulatory Commission.

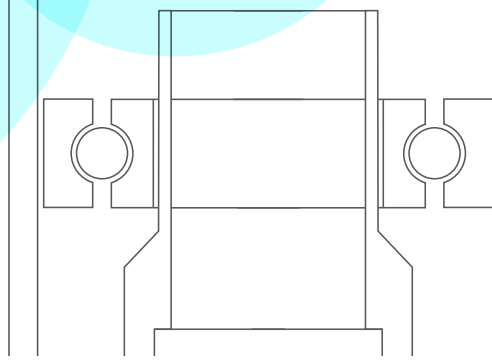
To demonstrate fuel cooling and identify operating margins, Eden partnered with Darren Talley and his team at Sandia through a TRGR Project to further prove out the company's design and establish operating limits. Talley and his team used a thermal-hydraulic computer model developed at Sandia to evaluate Eden's design concept. Using their experience with the Sandia reactor, the team evaluated the performance characteristics of the conceptual design and identified operating conditions and thresholds for flow instabilities by performing thermal-hydraulic analyses.

Experimental test results were evaluated to show void fraction and critical heat flux correlations compared to existing data. In doing so, areas of operational improvement were identified. Although Eden was unable to finish all the flow testing needed, the company is hopeful they can complete it with future partnerships. The final report that Sandia provided was beneficial in finalizing the company's design approach for their small nuclear reactor.

MEET THE PRINCIPAL INVESTIGATOR

Darren Talley
Sandia National Laboratories





Mallika Dasari
Senior Research Scientist

IR DYNAMICS

Agreement Type: License

IR Dynamics is developing a thermochromic nanotech coating that promises to make windows more energy efficient by controlling solar heat gain. Their coating rejects infrared (IR) heat when warm and transmits IR when cool. In other words, glass coated with the material automatically switches to reduce solar heat gain when it's hot outside, and switches back to let solar heat through when it's cool outside, with no visual change to the glass.

The nanoparticle technology that IR Dynamics utilizes was originally developed at Sandia National Laboratories and licensed by the company.

IR Dynamics was facing a challenge with the particle size control and scalability of its synthesis procedures. The company needed to produce smaller particles to reduce haze in its coatings. Using Sandia's decades of experience in synthesizing metal-oxide nanoparticles, a TRGR Project paired the company with an expert to help develop a new synthesis method. Dale Huber, a materials scientist at Sandia, worked with IR Dynamics to develop a more scalable approach to make smaller, more uniform nanoparticles, enhancing performance and reducing haze in the window coatings.

The understanding gained through the TRGR Program led IR Dynamics to a solution that they consider a breakthrough. Now, after six years of research, IR Dynamics has opened a \$6.5 million A-Round Raise that will move the company into pilot-scale manufacturing in New Mexico. By early August 2022, the company had already raised over \$500,000 toward its goal.

“The support provided through the TRGR Program for scientific research was crucial in the development of our energy efficient glass and window films.”

William Kurtz
COO and Founder
IR Dynamics, LLC



Ashley Cardenal
Senior Chemist



MEET THE PRINCIPAL INVESTIGATOR

Dale Huber
Sandia National Laboratories



mPOWER TECHNOLOGY

Agreement Type: License

mPower Technology is a solar cell and power technology company that licensed technology from Sandia National Laboratories to create their DragonSCALES™ photovoltaic (PV) arrays for space and aerospace applications.

To accelerate the commercial introduction of their silicon and silicon/perovskite tandem solar cells for space power applications, mPower needed to determine the best materials for manufacturing cells with radiation resilience. The company wanted to access product testing and characterization capabilities. They turned to Sandia to access the necessary equipment and expertise needed to further evaluate their products.

Sandia researcher Josh Stein and his team were able to use their knowledge and Sandia's cutting-edge facilities to model and characterize mPower's solar cells. The Sandia team performed molecular dynamic simulations to identify and mitigate radiation defects. The team also utilized Sandia's thermomechanical modeling capabilities to evaluate the preliminary flexible circuit design to understand the impact of temperature fluctuation in space on the company's materials.

These results empowered mPower to update their solar cell designs and identify construction materials to make them more reliable in a space environment. The company is continuing to validate their optimized design with customers and partners, accelerating their product adoption into the market.



MEET THE PRINCIPAL INVESTIGATOR

Josh Stein
Sandia National Laboratories



“The support we had from Sandia through TRGR helped us accelerate our product introduction.”

Murat Okandan
*CTO and Founder
mPower Technology, Inc.*



Murat Okandan
CTO and Founder

“Los Alamos helped us understand how our catalyst materials work and how to improve them. Better materials allow us to expand our customer base and therefore our footprint and workforce in New Mexico.”

Thomas Stephenson
CEO and Chairman
Pajarito Powder, LLC



PAJARITO POWDER

Agreement Type: License

Pajarito Powder designs and manufactures advanced catalysts used in electrolyzers and fuel cells. The catalyst powder made by Pajarito Powder—using technology licensed from Los Alamos National Laboratory—is at the heart of hydrogen fuel cell systems central to the functionality of commercial and personal vehicles.

To enter the global market, the company needed to optimize their catalyst powders and certify operation, durability, and performance. This would also help them in developing the next generation of catalysts to meet future customer demands. Durability is particularly important to industry success since car buyers want vehicles which will maintain performance for years to come.

A TRGR Project enabled the company to work with Los Alamos scientist Siddharth Komini Babu and his team (Xiaojing Wang, Rangachary Mukundan, and Rod Borup) to investigate the degradation process of the catalyst products. Komini Babu and his team used methods pioneered at Los Alamos to test durability and performance, and identify current degradation mechanisms that wear down the catalyst over time. This benchmarked the catalyst's performance and durability, and also identified areas where the catalyst could be optimized.

Pajarito Powder was able to use the results and guidance provided by Los Alamos to expand their customer base and deploy their fuel cells globally. They also have been able to hire six New Mexicans in the past six months. The company continues to work with Los Alamos through a second TRGR Project to develop their next-generation catalyst.



Sam McKinney
Team Leader
Electrode Science



MEET THE
PRINCIPAL INVESTIGATOR

Siddharth Komini Babu
Los Alamos National Laboratory

UbiQD is an advanced materials company producing next-generation quantum dot materials and enabled end-products based on technology licensed from Los Alamos National Laboratory.

The company leverages these fluorescent materials to harvest sunlight at a low cost, over large areas, for example, in order to generate electricity from a window. UbiQD's solar windows are already being used in several commercial buildings. One exciting new application for the technology is in the space sector, and the company has a contract with NASA.

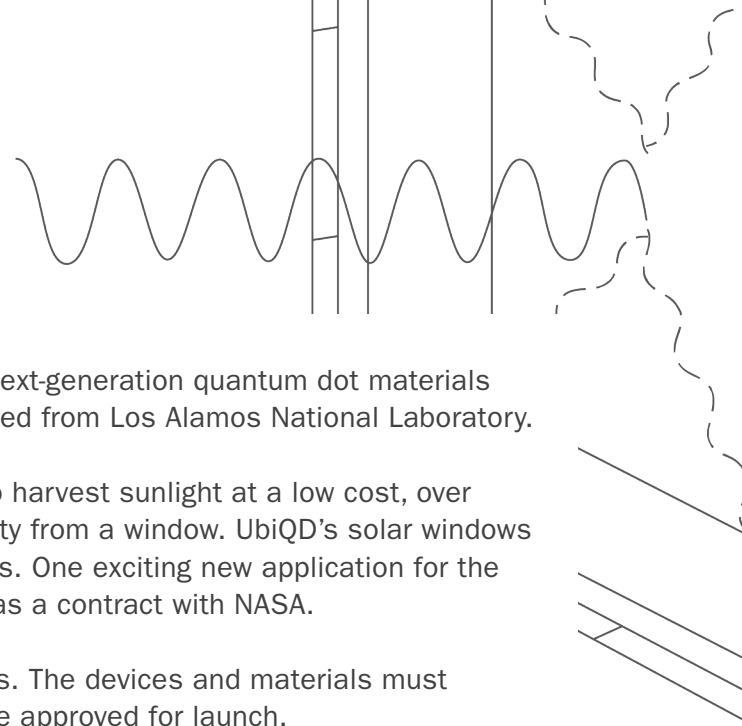
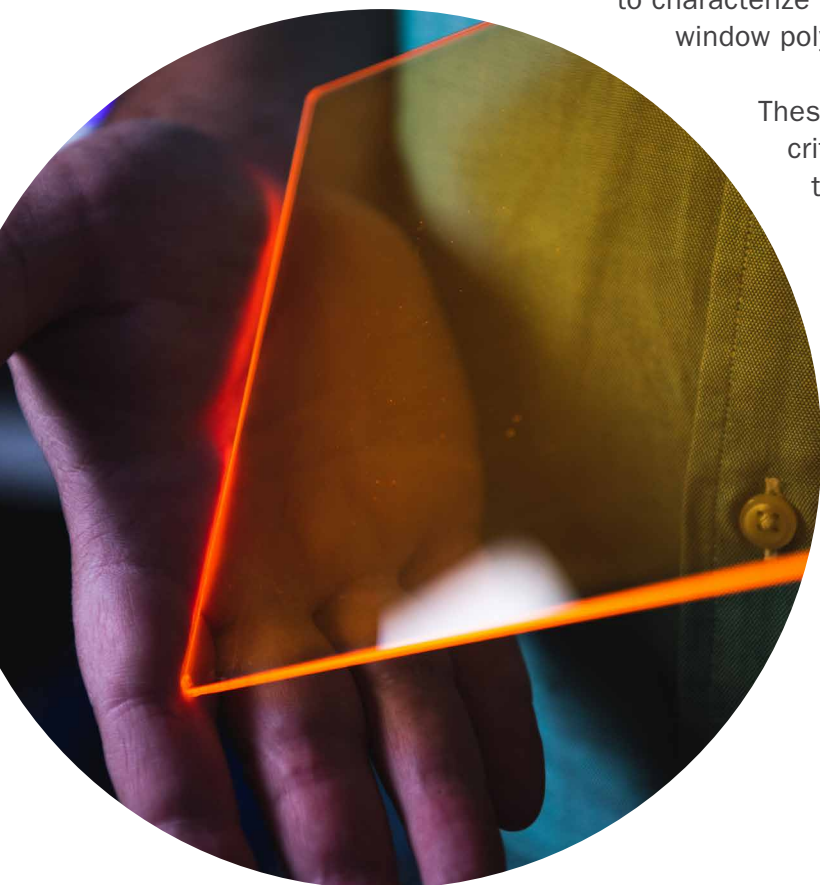
Entering the space industry introduced new challenges. The devices and materials must pass required payload and thermal vacuum tests to be approved for launch.

Through a TRGR Project, UbiQD partnered with Los Alamos space instrument expert Ryan Hemphill and his team to simulate rocket flight conditions. Hemphill designed and executed environmental tests on the samples, including vibration from an electrodynamic shaker table, thermal testing in a thermal vacuum chamber, and outgas testing to characterize the levels of gases emitted from the solar window polymers in a space environment.

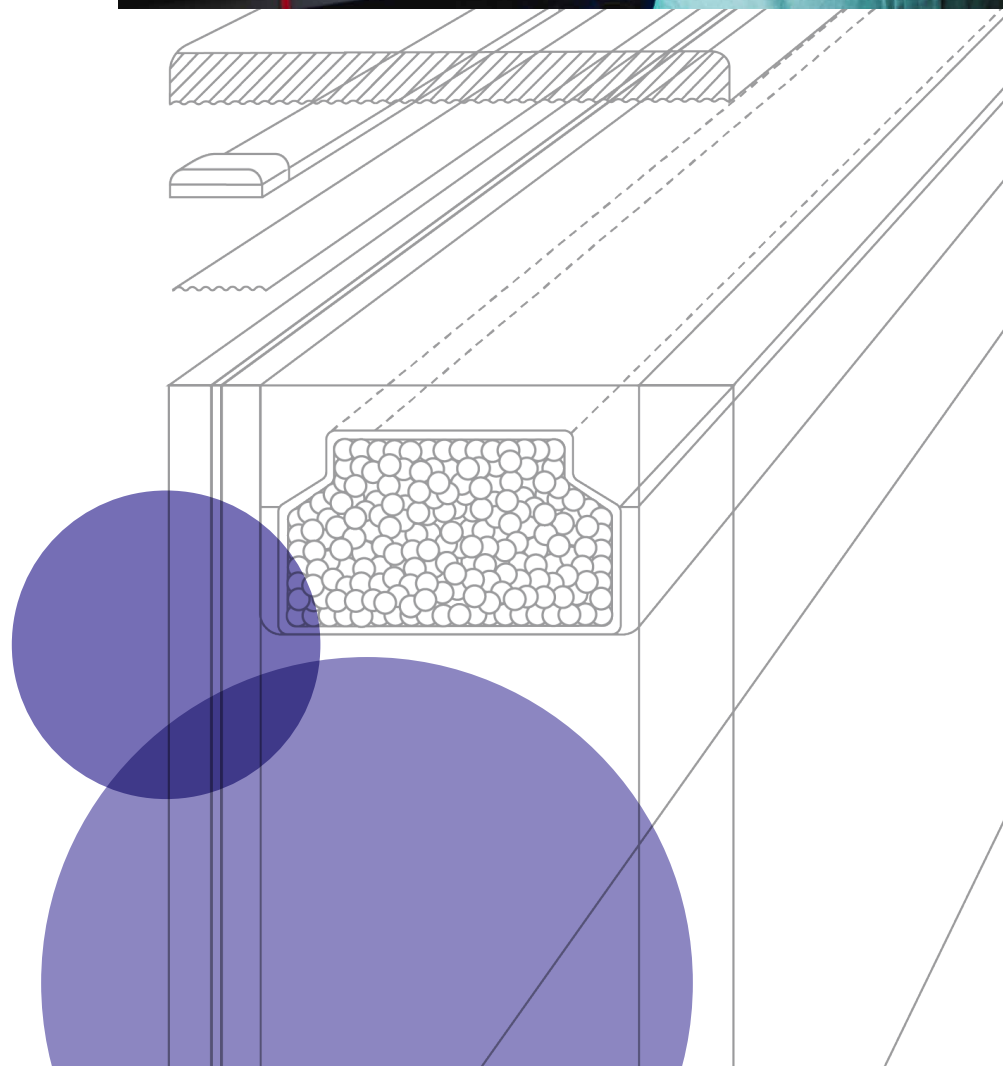
These preliminary tests gave UbiQD critical insight into product performance that will guide future improvements for both terrestrial and in-space applications. The data provided prepared them for their upcoming low Earth orbit payload tests with the California Institute of Technology, and helps support the ongoing NASA collaboration —both potential first space-sector customers.

MEET THE PRINCIPAL INVESTIGATOR

Ryan Hemphill
Los Alamos National Laboratory



Hunter McDaniel
Founder and CEO



“TRGR significantly helped us mature our technology for space use cases and launch certification. We were able to get highly relevant data that validated our prototypes, met the tough requirements on rocket payloads, and that should perform well in the conditions of low Earth orbit. We are optimistic that later this year we’ll put the first quantum dots into space.”

Hunter McDaniel
Founder and CEO
UbiQD, Inc.

Z DIVISION

Agreement Type: License

Z Division is building a cybersecurity technology and services business using High-Fidelity Adaptive Deception and Emulation System (HADES) technology licensed from Sandia National Laboratories.

HADES is a cybersecurity platform that takes advantage of emerging technologies in cloud computing (virtualization), software-defined networking (SDN), virtual machine introspection (VMI), dynamic deception, and analytics to radically change the way cyber defenders protect their networks and gain insight into an adversary's methods. The technology migrates attackers into a realistic deception environment that is isolated from the host system and allows the defender an undetectable but omniscient view of the attacker while providing a rich set of analytics. Z Division partnered with New Mexico-based electric utility company PNM Resources to run use-case scenarios to determine the suitability of HADES for cybersecurity on the electric grid.

Through a TRGR Project, Vincent Urias and his team at Sandia were asked to evaluate the use-case results to help Z Division define the specific application of HADES for the utility industry and position the company for customer acquisition. The Sandia team worked with the Z Division team to craft a plan integrating the original iteration of the technology into the current grid infrastructure to confirm the proof of concept for applications in electricity infrastructure security.

With this assistance, Z Division verified the commercial application of HADES in infrastructure cybersecurity and is building a strong foundation to apply the technology to utility applications. As a result of the TRGR engagement, Z Division was able to secure its first customer contract.



MEET THE
PRINCIPAL INVESTIGATOR

Vincent Urias
Sandia National Laboratories



Daniel Bowen
*IT Services
Engagement Manager*

James McBurney
CEO

“The TRGR Program helped us to deploy technology that is an essential element for protecting the critical infrastructure that keeps the lights on in New Mexico.”

James McBurney
*CEO
Z Division, LLC*

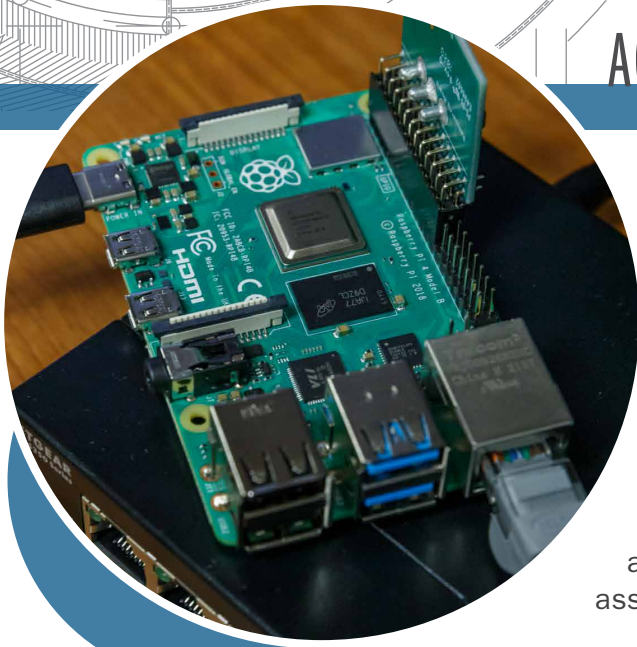
IN-PROGRESS PROJECTS

TRGR applications are accepted and projects are started on a rolling basis throughout the year. Sandia and Los Alamos national laboratories scientists and engineers are now working with companies on the following projects. Funding for each project cannot exceed \$150,000 per project per State of New Mexico fiscal year.

ACTIVE ASSURANCE

Agreement Type: License

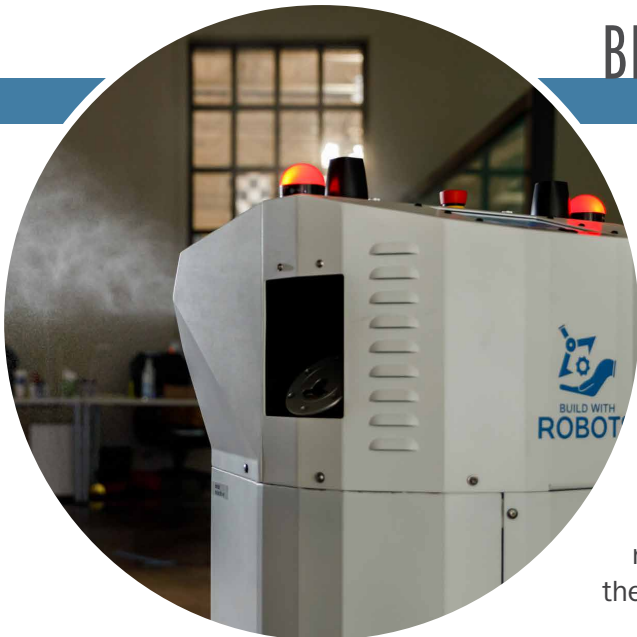
Active Assurance, Inc. is a cyber security company built upon Digitally Unclonable Function technology software, licensed from Sandia. Active Assurance is partnering with Sandia to test and validate the technology, which the company wants to use to create a method of substantially reducing the risk of a security breach by a malicious cyber attacker. The results of this TRGR Project will be to build and test a minimally viable system that prospective investors, strategic partners, regulatory agencies, and commercial customers can interact with and assess for their cyber-security needs.



BREEZY ROBOTICS

Agreement Type: License

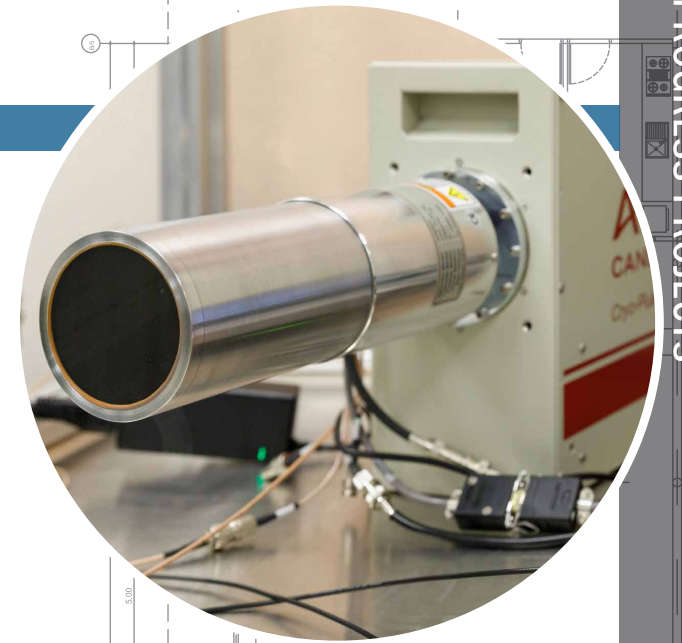
Breezy Robotics, Inc. brings robotics to disinfection by sourcing the right disinfectant for each job and finding an economical way to disperse the disinfectant. Based on a disinfectant license from Sandia, Breezy Robotics and Sandia are collaborating to produce a new concentrated disinfectant product. The goal of this new product is to minimize residue, enabling it to be used in high-traffic areas. The new formulation will be supplied with hydrogen peroxide and mixed with water on site, reducing transportation and storage logistics. If successful, the company will be able to acquire new global customers.



KAIROS POWER

Agreement Type: CRADA

Kairos Power, LLC is a nuclear energy company focused on commercializing a fluoride salt-cooled high temperature reactor. To facilitate the development of their reactor, Kairos initiated a CRADA with Sandia. Their TRGR Project is allowing Kairos and Sandia to collaborate on developing a unique sensor that efficiently and effectively monitors fuel use for improved reactor safety and fuel efficiency. Together, they are developing a novel gamma spectrometry system to provide non-destructive monitoring of the nuclear fuel. Utilizing TRGR Project outcomes, Kairos will finish development and testing of the sensor as a component of their reactor.

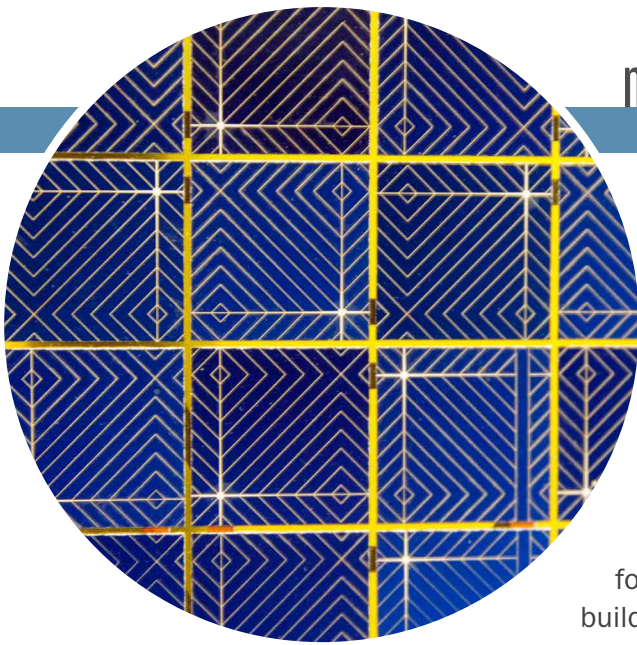


MANAGEMENT SCIENCES

Agreement Type: License

Management Sciences, Inc. (MSI) develops sensors and safety equipment to minimize downtime of industrial equipment systems. MSI licensed a Sandia nano-ceramic layer by layer (LBL) coating technology for the development of a highly durable energy production and storage system connector that mitigates the risk of fire caused by environmental corrosion or overheating in solar energy storage systems. Sandia is testing the performance of this coating within MSI's energy storage system connector. If these tests are successful, this technology will provide a competitive advantage for MSI, along with more reliable power production at higher voltage levels.

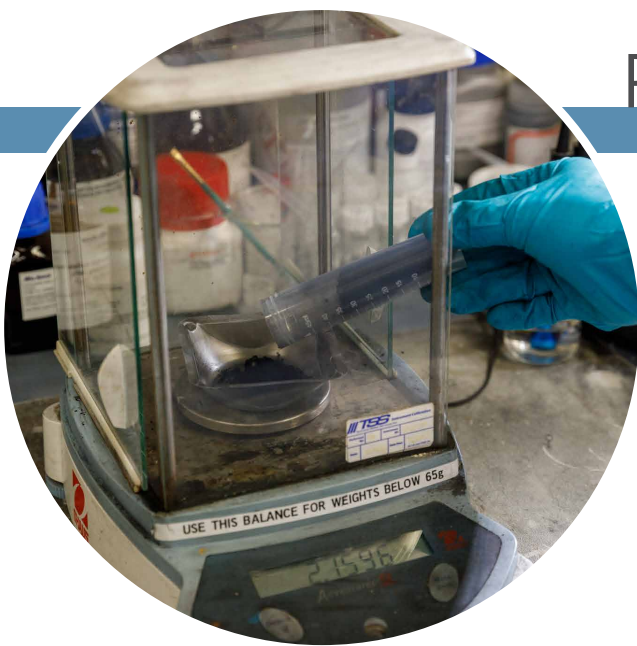




mPOWER TECHNOLOGY

Agreement Type: License

mPower Technology, Inc. develops and provides solar cell technology and systems solutions for solar energy collection based on technology licensed from Sandia. Through TRGR, Sandia is providing thermomechanical modeling of solar array assemblies and measurement of advanced solar cell structures. The modeling and characterization will help further improve the resilience, manufacturability, and performance of the mPower solar arrays to create a low-cost, high-efficiency power system for use in aerospace and space applications, followed by building/vehicle integrated and portable power systems.



PAJARITO POWDER

Agreement Type: License

Pajarito Powder, LLC manufactures and develops fuel cell and electrolyzer catalysts based on technology licensed from Los Alamos. The Lab is testing the performance of the company's catalysts in a variety of fuel cell assemblies created under different manufacturing conditions. The data generated will be used by Pajarito Powder to accelerate customer adoption and inform the company about the needs for product improvement.

QUASR DIAGNOSTICS

Agreement Type: License

QUASR Diagnostics, Inc. is creating highly sensitive, rapid, point-of-care infection and genetic disease tests based on QUASR technology licensed from Sandia. The QUASR technique greatly amplifies LAMP test signals, making them brighter and easier to read. Sandia researchers are advancing the technology to test for respiratory illnesses such as Influenza A, B, and RSV. Assay design and validation is required prior to commercialization of these important tests that will allow better informed clinical decision making at the point of care. The ongoing research and development into the QUASR assay technology will lead to a more mature technology with improved sensitivity and clinical performance, ready for market adoption.



TPL

Agreement Type: CRADA

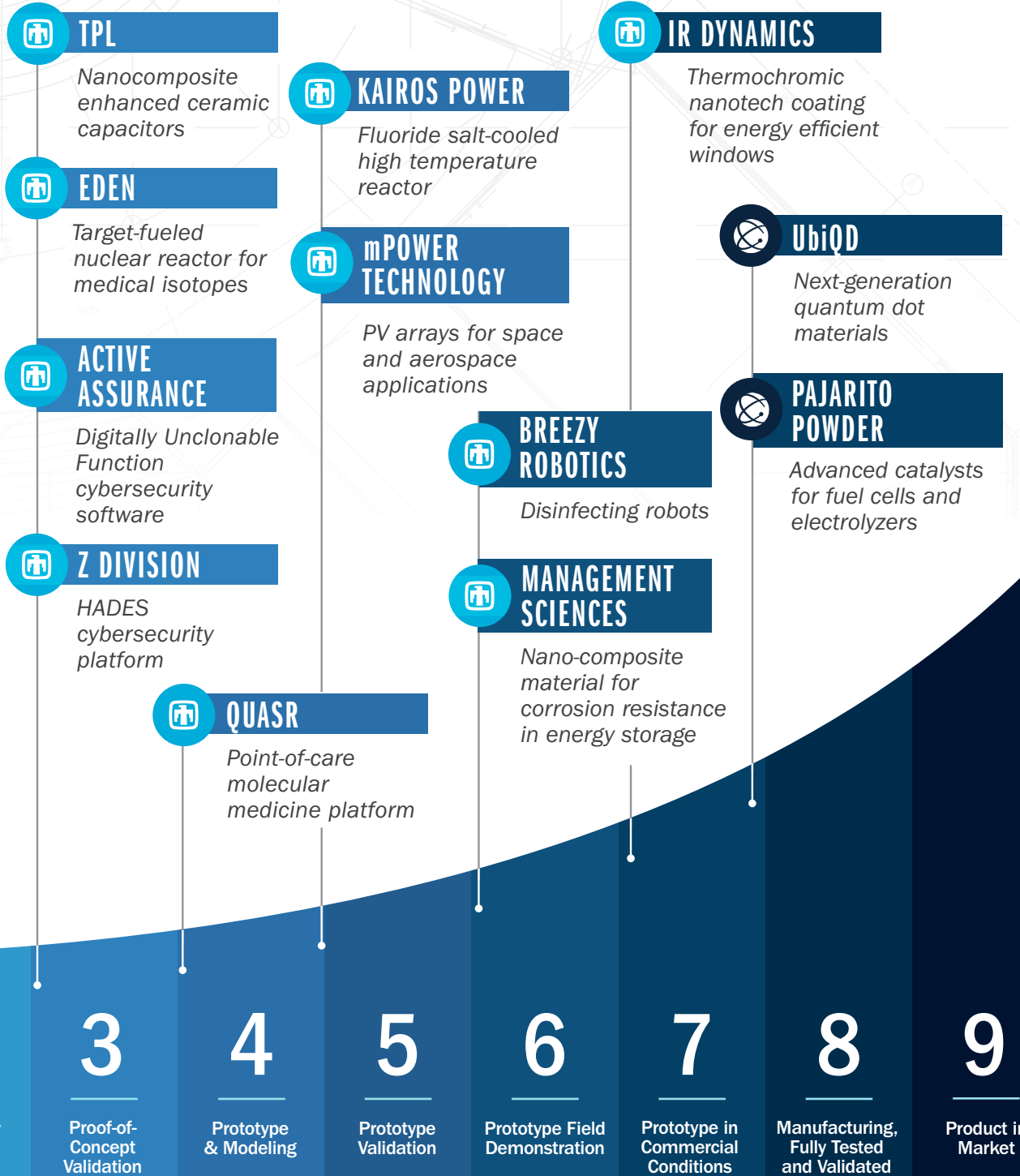
TPL, Inc. develops advanced dielectric materials including polymeric films, ceramic nanopowders and capacitors. The company entered into a CRADA with Sandia to advance the company's enhanced ceramic capacitors. Through this TRGR Project, the Electrical and Radiation Sciences Center at Sandia is assisting TPL to further engineer the reliability of their advanced dielectric materials. Enhanced capacitor designs will enable improved energy storage for a range of electrical propulsion and pulsed power capabilities.



PROGRAM METRICS

TECHNOLOGY READINESS

Technology Readiness is a method of assessing the maturity of technologies. There are many steps required to take a product from the early stages of the development process to proof of concept, product demonstration, manufacturing, and distribution. The TRGR Technology Readiness Initiative helps New Mexico companies move their products from concept through market introduction.



BUSINESSES PARTICIPATING IN TRGR

	SANDIA	LOS ALAMOS	TOTAL
FY21 - FY22*			
Companies Served	10	2	12
Projects	11	3	14
Licenses	10	2	12
CRADAs	2	0	2

VALUE OF ASSISTANCE PROVIDED

	SANDIA	LOS ALAMOS	TOTAL
FY21	\$167,813	\$65,450	\$233,263
FY22	\$443,095	\$73,983	\$517,078
TOTAL	\$610,908	\$139,433	\$750,341

*TRGR Projects start at various times during the year so they may be active during multiple fiscal years. Two businesses participated in more than one TRGR Project in FY21-FY22.

ECONOMIC IMPACT

FOR BUSINESSES PARTICIPATING IN TRGR*

TRGR is accountable to the State of New Mexico for its expenditures. It measures its economic impact through client surveys conducted by Research and Polling, Inc. and economic analysis provided by Robert Grassberger, PhD Economist. All companies that completed their projects participated in the survey.

	FY21 - FY22
Return on Investment (ROI) **	0.26
Small Business Jobs Created & Retained	12
Increase in Revenue	\$510,000
Investment in NM Goods / Services	\$278,000
New Funding / Financing Received	\$15,103,465
Average Reported Salary (2022)	\$62,234

* Economic surveys are performed six months to one year after project completion. It should also be noted that TRGR Projects are intended to mature technology and move it to a commercial state.

** ROI is based on salaries of jobs created and retained. Because TRGR Projects are in a very early stage of development, the ROI to the companies may not be truly reflected in these values. It should be noted that the six companies that completed this survey showed a large amount of new funding and financing.

BENEFITS TO TRGR BUSINESSES

New Mexico small businesses achieved positive results after receiving technical assistance from the TRGR Program. Feedback from companies that participated in the economic impact client survey revealed that:

100% were able to move the technology closer to maturation.

TWO COMPANIES reported that they were able to move from a prototype to a commercial product/service and have been able to market/manufacture the product/service.

50% of the companies reported they have experienced other economic benefits due to the assistance.

100% of the companies reported as a small business and have remained located in New Mexico.

CUSTOMER SATISFACTION

Quality of TRGR Services	100%	VERY SATISFIED
Satisfaction with Project Manager	100%	VERY POSITIVE
Satisfaction with Technical Staff	100%	STRONGLY AGREE
Effect of TRGR Assistance on Company	100%	STRONGLY AGREE
Would Recommend TRGR Program	100%	STRONGLY AGREE

Thank you to everyone who took part
in the TRGR Project Review Board:

Dave Blivin	<i>Cottonwood Technology Ventures</i>
James Carney	<i>Sandia National Laboratories</i>
Todd Christenson	<i>HT Micro</i>
Jon Clark	<i>New Mexico Economic Development Department</i>
Andrew Coors	<i>Steelhead Composites, LLC</i>
Lisa Danielson	<i>Los Alamos National Laboratory</i>
Dale Dekker	<i>Dekker Perich Sabatini</i>
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Melissa Fox	<i>Los Alamos National Laboratory</i>
Craig Gittleman	<i>General Motors</i>
Steven González	<i>NASA</i>
Alex Greenberg	<i>New Mexico Economic Development Department</i>
Sang Han	<i>University of New Mexico & Osazda Energy</i>
Charlie Hanley	<i>Sandia National Laboratories</i>
Mark Johnson	<i>New Mexico Technology Research Collaborative</i>
Chris Kerestes	<i>Airforce Research Laboratory</i>
Lorie Liebrock	<i>New Mexico Tech</i>
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Duncan McBranch	<i>Los Alamos National Laboratory</i>
Michael Meyer	<i>Platinum Star IP Partnerships, LLC</i>
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Gabe Mounce	<i>SpaceWERX</i>
Vivek Murthi	<i>Nikola Motors</i>
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Ed Parma	<i>Eden Radioisotopes, LLC</i>
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Drew Tulchin	<i>New Mexico Angels</i>
Waneta Tuttle	<i>Tramway Ventures</i>
Walter Ugalde	<i>NASA</i>
Steve Walsh	<i>University of New Mexico</i>
Bobbie Williams	<i>NM Energy Manufacturing - Consortium and Institute</i>
Chris Ziomek	<i>Build With Robots, Inc.</i>

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THANK YOU

to everyone who contributed to this report.

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- Sharon Evans, *Financial Administrator*
- Linda von Boetticher, *Annual Report Project Manager*
- Stacey Long Reynolds, *Designer*

Los Alamos National Laboratory

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- Julia Wise, *Program Lead*
- Joseph West and Jeanette Trujillo, *Finance*
- Hannah Conrad, *Writer*
- David Woodfin, *Photographer*

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- John Rogers, *Project Manager*

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- Ellen Cline, *Editor*
- Bret Latter, *Photographer*



Technology Readiness INITIATIVE

WWW.NMTRGR.ORG



Sandia National Laboratories

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525. SAND2022-15554 M



Los Alamos NATIONAL LABORATORY

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is managed by Triad National Security, LLC, for the National Nuclear Security Administration of the U.S. Department of Energy under contract 89233218CNA000001.



U.S. DEPARTMENT OF
ENERGY

