Los Alamos NATIONAL LABORATORY

Sandia National Laboratories

Compete. Council on Competitiveness

Competitiveness Conversations Across America

Securing Innovation in New Mexico

Santa Fe Convention Center
Santa Fe, New Mexico
May 5–6, 2025

THE COUNCIL ON COMPETITIVENESS is a nonprofit, 501 (c) (3) organization as recognized by the U.S. Internal Revenue Service. The Council's activities are funded by contributions from its members, foundations, and project contributions. To learn more about the Council on Competitiveness, visit Compete.org.

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Letter from The Hon. Deborah L. Wince-Smith, President and CEO, Council on Competitiveness

For nearly 40 years, the Council on Competitiveness—a nonpartisan alliance of CEOs, university presidents, labor leaders, and directors from the United States Department of Energy National Laboratories—has worked to advance U.S. productivity, prosperity, and innovation. Our impact has helped shape the America COMPETES Act and CHIPS and Science Act, launch the national initiatives in digital engineering and advanced manufacturing, and elevate the importance of place-making innovation, among many other contributions to U.S. competitiveness.

Today, our mission is more urgent than ever, primarily due to two megatrends. First, a convergence of powerful technologies—artificial intelligence, quantum computing, microelectronics, biotechnology, and advanced manufacturing—is reshaping our economy, security, and society at an unprecedented pace. The second megatrend is the rapid scale-up and intensification of global competition, particularly with China, which by some estimates now leads in 57 of 64 critical technologies.

To meet this moment of growing global competition and opportunity, the Council established the "National Commission on Innovation and Competitiveness Frontiers"—a private-sector-led effort to identify bold strategies for securing America's innovation future. One of the Commission's key early findings was the risk of relying too heavily on a handful of high-cost innovation hubs. The Commission concluded that if the United States is to maintain its global competitive position, it must tap the full potential of all regions and people across America.

We must ensure that America's innovation potential is not confined to a few coastal hubs, but drawn from every region and every community across our diverse, $30 trillion economy.

This is fundamental belief is at the heart of the Competitiveness Conversations Across America initiative, a series of discussions aiming to elevate the emerging and best—and next—practices of the regional innovation ecosystems across the nation.

Given New Mexico's recent economic growth, the state was a prime example of an expanding innovation-fueled economy. That is why on May 5-6, 2025, the Council worked with Los Alamos National Laboratory and Sandia National Laboratories to unite leaders from across the state and region to better understand the factors shaping the distinctive characteristics of the complex ecosystem—from the talent, technology, infrastructure, investment, partnership, policy, and other factors—underpinning this growth.

During our New Mexico edition of the Competitiveness Conversation Across America series, titled Securing Innovation in New Mexico, regional and national leaders from business, higher education, government, and the U.S. Department of Energy National Laboratories discussed the factors that allowed Santa Fe and the broader region have grown into a hub for AI, space technology, national security, and advanced manufacturing. The leaders we heard from all brought exceptional, experienced perspectives and insight into what is driving New Mexico's resilience, innovative spirit, and economic vitality.

Following two days of high-level discussions, I took away many key lessons from New Mexico that warrant broader consideration, and many of these are captured for continued discussion in the report that follows, but let me share three that are worth elevating to you here:

1. New Mexico's U.S. Department of Energy National Laboratories—Los Alamos and Sandia—are critical drivers of innovation that make the state an innovation powerhouse across multiple domains—including quantum—but the labs cannot deliver economic growth in a vacuum. To fully realize the potential of its innovation ecosystem, New Mexico must invest in commercialization, support startups, and build connective infrastructure and talent pool—efforts that require bold, state-level strategies and leadership to complement the labs' nationally focused missions.
2. Artificial intelligence is rapidly evolving from a tool to a collaborator, transforming not only how research is conducted but also how knowledge is generated, work is performed, and students learn. To harness this potential, institutions must foster AI literacy, integrate interdisciplinary perspectives, and build public trust through transparent, ethical implementation. But the transformative power of AI presents risks, too, and intentional governance and widespread access are key factors in helping ensure it is a tool of progress.
3. New Mexico's sovereign wealth fund must be transformed from a passive reserve into a strategic engine for long-term innovation and inclusive economic growth. With the second-largest sovereign wealth fund of any state, New Mexico has a remarkable opportunity to invest in its future. Rather than treating it as a rainy-day fund, leaders are developing strategies to deploy forward-looking investments into education, workforce development, and commercialization capacity, which will benefit the state and the country for decades to come.

I especially thank my co-hosts for the New Mexico edition of the Competitiveness Conversation Across America series: Dr. Thom Mason, Laboratory Director at Los Alamos National Laboratory, and Dr. James Peery, Laboratory Director Emeritus at Sandia National Laboratories. Their partnership with me and the Council was instrumental in inspiring this Conversation and galvanizing the remarkable community of innovators and leaders making New Mexico a vital asset to U.S. competitiveness. The leadership and stewardship of Dr. Mason and Dr. Peery have positioned both Los Alamos and Sandia as the crown jewels of New Mexico's innovation ecosystem—and of the United States' competitive position.

Sincerely,

The Hon. Deborah L. Wince-Smith
President & CEO
Council on Competitiveness

Agenda: Securing Innovation in New Mexico

Monday, May 5, 2025

AFTERNOON

1:00 Networking & Registration

1:30 Putting Competitiveness in Context: Challenges and Opportunities

The event cohosts will kick off the New Mexico edition of the **Competitiveness Conversations Across America** series—taking place under the auspices of the **National Commission on Innovation and Competitiveness Frontiers**—framing the grand challenges and opportunities facing New Mexico and the United States.

Dr. J. Patrick Fitch
Deputy Laboratory Director, Science, Technology and Engineering, Los Alamos National Laboratory

Mr. Josh Parsons
Associate Laboratories Director, Sandia National Laboratories

Moderator

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

2:00 A First Look: Innovation & Competitiveness—New Mexico

A snapshot of key pillars supporting New Mexico's innovation-based competitiveness.

Mr. Chad Evans
Executive Vice President and Chief Operating Officer, Council on Competitiveness

2:10 Developing the New Mexico Innovation Ecosystem

Leaders will explore the key drivers of New Mexico's innovation ecosystem. They will highlight major challenges and opportunities in the region, as well as suggest best practices to scale nationally to dramatically increase the innovation capacity of the United States.

Dr. Luis Chavez
CEO and Founder, Hydrosonics

Mr. Robey Clark
Director, Strategic Initiatives, Kairos Power

Mr. Yeri Lopez
Director, Partnerships, J2 Ventures

Mr. Abhi Mukherjee
Operating Partner, CerraCap Ventures

Ms. Nora Sackett
Director, Office of Strategy, Science, & Technology,
New Mexico Economic Develoent Department

Moderator

Dr. Duncan McBranch
Senior Director, Partnerships and Pipelines, Los Alamos National Laboratory

2:55 Break

3:15 The Future is AI: Exploring the Possibilities and Pitfalls

From writing novels to designing new molecules, artificial intelligence is transforming nearly every sector and fueling a new era of innovation. This panel will lead a thought-provoking discussion on the challenges, opportunities, and potential risks of AI's future impact on New Mexico and the United States.

Dr. Kevin Dixon
Director, Sandia National Laboratories

Ms. Meg Fisher
Co-Founder, Santa Fe AI Partners

Ms. Geetika Gupta
Director, Product Management, NVIDIA

Dr. Aric Hagberg
Division Leader, Los Alamos National Laboratory

Dr. Melanie Moses
Professor, Department of Computer Science, University of New Mexico

Dr. Will Tracy
Vice President, Applied Complexity, Santa Fe Institute

Moderator

Dr. Jason Pruet
Senior Director, Artificial Intelligence Office, Los Alamos National Laboratory

4:00 Tech Talk: Beyond Genetics—How Infections Alter Our 3D Genome

Understanding how viruses reshape the host genome is key to preparing for future biological threats. However, our knowledge of this important biological process remains limited. This talk will explore how new research is uncovering the methods by which infections alter the body's DNA, giving us new insight into the possibilities for combating biological threats.

Dr. Cullen Roth
Genomics and Bioanalytics Scientist, Los Alamos National Laboratory

4:15 The Intersection of Science and National Security

As research and innovation accelerate progress and U.S. competitiveness in fields like AI, biotech, and cybersecurity, research security has never been more pressing. Today, researchers and institutions face a growing array of threats to their work, from intellectual property theft to nation-state espionage. In this session, our expert panel will unpack the latest risks and strategies for protecting research and innovation.

Dr. Kevin Dixon
Program Director, Sandia National Laboratories

Ms. Rebecca Jackson
Chief Privacy Officer and Senior Counsel, Sandia National Laboratories

Dr. Jason Pruet
Senior Director, Artificial Intelligence Office, Los Alamos National Laboratory

Moderator

The Hon. Will Tobey
Center Director, Center for National Security and International Studies, Los Alamos National Laboratory

5:00 Break

5:45 Competitiveness Conversation Reception

6:15 Competitiveness Conversation Dinner Welcome

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

6:20 Fireside Chat: The Quantum Connection in New Mexico

Join us for a strategic conversation on the impact of quantum technology in New Mexico's innovation ecosystem. This chat will explore how a rapidly growing firm can optimize its collaboration with two leading national laboratories. Leaders from each organization will discuss partnership strategies, current trends, and opportunities to drive innovation and economic growth in the region.

Dr. Deborah Frincke
Associate Laboratories Director, National Security Programs, Sandia National Laboratories

Dr. Thom Mason
Laboratory Director, Los Alamos National Laboratory

Dr. Avinash (Nash) Palaniswamy
Chief Commercial Officer, Quantinuum

Moderator

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

6:50 Competitiveness Conversation Dinner

8:15 Dinner Concludes

Tuesday, May 6, 2025

8:00 Breakfast and Networking

9:00 The New Space Race: Harnessing the Opportunities of Agile Space

The space industry is embarking on a new era of competition and innovation, marked by the emergence of pioneering companies like SpaceX and Virgin Galactic. These new entrants have shaken up the traditional space industry, launching new sectors like space tourism and igniting a global space race among companies and nations. A surge in innovation has also given rise to a proliferation of small satellites, known as CubeSats, which are democratizing access to space. Leaders on this panel will reflect on a decade of progress within the space industry and the opportunities it presents for life on Earth.

Dr. Brad Clevenger
Vice President, Space Systems, Rocket Lab

Ms. Casey DeRaad
CEO, New Space Nexus

Mr. Gabe Mounce
Director, Technology Engagement Office, Air Force Research Laboratory

Col. Jeremy A. Raley
Commander, Phillips Research Site; Director, Space Vehicles Directorate, Air Force Research Laboratory, Kirtland Air Force Base

Mr. Randy Trask
Executive Director, Q Station

Moderator

Ms. Jerriann Garcia
Program Director, Sandia National Laboratories

9:45 Tech Talk: Driving Innovation in New Mexico—Public-Private Partnerships for Economic Growth

New Mexico is a leader in federally funded innovation, with state-backed programs that accelerate technology commercialization and economic development. This talk will highlight successful partnerships between the State of New Mexico and U.S. DOE National Laboratories, including efforts to advance quantum information science and programs like the New Mexico Small Business Assistance (NMSBA) and Technology Readiness Gross Receipts (TRGR) tax credit programs. These initiatives demonstrate how strategic collaboration can leverage state and federal investments to drive regional innovation and national competitiveness.

Mr. David Kistin
Manager, Business Development, Sandia National Laboratories

10:00 Tech Talk: How Academia, the National Laboratories, and Private Industry Spur Innovation in the Wild West of Quantum Computing

Quantum computing is a high-risk, high-reward field fueled by the prospects of performing certain valuable computations exponentially faster than their classical alternatives. Progress is driven by a mixture of research performed by academia, national labs, and private industry, with the United States supporting strong efforts across all three. This Tech Talk will explore how each of these groups contributes distinctive and complementary advances in accelerating progress toward building a useful quantum computer.

Dr. Dan Stick
Senior Scientist, Sandia National Laboratories

10:15 Break

10:30 Manufacturing Innovation: Embracing Change in the Era of Automation

Advanced manufacturing exists at the intersection of robotics, automation, 3D printing, data processing, and predictive simulation. It is poised to revolutionize how we design and deliver products, creating abundant opportunities for those ready to embrace the challenges of adopting advanced manufacturing technologies. Leaders and practitioners making up this panel will discuss how advanced manufacturing is unfurling in New Mexico and the United States.

Mr. Jeffrey Connor
Director, New Mexico Operations, Kansas City National Security Campus

Dr. Lonnie Love
Fellow, Sandia National Laboratories

Dr. Rajinder Singh
Group Leader, Materials Synthesis and Integrated Devices, Los Alamos National Laboratory

Ms. Jennifer Sinsabaugh
CEO, New Mexico MEP

Moderator

Dr. Mohan Karulkar
Manager, Sandia National Laboratories

11:15 Mapping the Enabling Conditions for New Mexico's Competitiveness Strategy for the Next 25 Years

Building on insights shared throughout the New Mexico Competitiveness Conversation, this leadership panel will examine the enabling conditions essential for the region's competitiveness strategy over the next 25 years, including the intersection of policy, infrastructure, innovation, technology, and workforce development.

Mr. Dale Dekker
Founder, Dekker Perich & Sabatini

Ms. Tracy Hartzler
President, Central New Mexico Community College

Dr. James Holloway
Provost and Executive Vice President, Academic Affairs, University of New Mexico

Ms. Kathy Keith
Director, Community Partnerships Office, Los Alamos National Laboratory

Ms. Mary Monson
Senior Manager, Technology Partnerships and Business Development, Sandia National Laboratories

Moderator

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

12:00 Competitiveness Conversation Concludes

Letter from Mr. Chad Evans, Executive Vice President and Chief Operating Officer, Council on Competitiveness

Dear Council Community,

New Mexico exemplifies the power of place-making innovation, as it works to strategically align investment, research, and policy to activate and accelerate every step of the dynamic, non-linear innovation process—from imagination, insight, ingenuity, invention, to impact.

Central to New Mexico's innovation economy are the state's two U.S. Department of Energy National Laboratories—Los Alamos and Sandia. Largely due to these labs, New Mexico performs $11 billion in research and development annually and ranks second in the country for R&D intensity. Los Alamos and Sandia advance fundamental science, as well as actively shape the future of artificial intelligence, quantum computing, advanced manufacturing, space, and secure microelectronics.

Across New Mexico, we see an innovation ecosystem that is both technically exceptional and strategically coordinated. Initiatives like the New Mexico AI Consortium and the Elevate Quantum EDA Tech Hub foster collaboration across the region, connecting flagship universities, community colleges, federal agencies, and private industry. The partnerships and coordinated efforts exemplified in New Mexico model essential approaches for addressing the scale and complexity of today's great challenges, as well as delivering necessary improvements in productivity, security, and prosperity for the state and nation.

Moving forward, the Council will carry the lessons from the New Mexico edition of the Competitiveness Conversations Across America series, as we work to build a national movement. Our goal is to unlock the best—and next—practices for strategic place-making and innovation, enabling more people and communities to benefit from—and contribute to—the nation's innovation economy.

In preparation for the New Mexico Competitiveness Conversation, the Council developed a "First Look," which surfaces key data to help put the New Mexico competitive landscape into context. In the following section, I am excited to share more about what we discovered and hope it is of benefit to readers as they explore the comprehensive session summaries provided within this report.

We are particularly grateful to the leaders from across New Mexico who partners with us—from the U.S. Department of Energy National Laboratories to universities, economic development leaders, and community colleges—for their exceptional insights, ideas, and examples, which collectively brought this Competitiveness Conversation to life.

We look forward to continuing to learn from the innovators and leaders we met in New Mexico, and to sharing the insights we glean from their success across the nation in the months to come.

Sincerely,

Mr. Chad Evans
Executive Vice President and Chief Operating Officer
Council on Competitiveness

A First Look: Innovation and Competitiveness—New Mexico

Mr. Chad Evans
Executive Vice President and
Chief Operating Officer,
Council on Competitiveness

Session Overview

Council on Competitiveness Executive Vice President and Chief Operating Officer Chad Evans presented a snapshot of the key pillars supporting New Mexico's innovation-based competitiveness.

Launched in 2024, these conversations are meant to uncover the emerging best practices and policies driving innovation forward in regions across the country.

The core of all the Competitiveness Conversations is place-*making* innovation. Place-making innovation focuses on building and expanding regional innovation ecosystems in areas all around the country via the intentional, strategic creation of an investment, research, and policy ecosystem that makes a place come to life with a vigorous, vibrant, and innovation-driven economy. The focus of the series is on strengthening regional ecosystems to enhance economic resilience, foster inclusive growth, and elevate the United States' position in the global innovation landscape. For any innovation ecosystem to succeed, a supportive environment is needed across several dimensions.

New Mexico is home to a robust innovation ecosystem with distinctive strengths. In recent years, the state has experienced major economic growth, and our U.S. DOE national laboratory and university partners have driven a continued

standard of excellence and impact in the R&D ecosystem. However, the region must overcome workforce and infrastructure challenges to truly capitalize on its innovative momentum.

New Mexico experienced a significant increase in its rate of economic growth in the past five years, shrugging off several years of middling growth to come in line with the national rate. One major driver of this growth was the oil and gas industry. As the second-largest oil-producing state, New Mexico's economy and state revenues have been fueled by oil and gas over the last five years; in 2023, as much as 35 percent of the State's revenue came from oil and gas earnings. The mining, quarrying, and oil and gas extraction industries led New Mexico in economic output and made up almost half of the industrial contribution to GDP growth in 2023.

New Mexico has one of the strongest research and development spending environments in the nation, performing almost $11 billion in R&D each year. The state's R&D ecosystem is largely driven by FFRDCs, including Sandia and Los Alamos. In fact, New Mexico accounts for almost 30 percent of all FFRDC funding in the nation, ranks 3rd in federal R&D funding, and ranks 2nd in R&D intensity.

Sandia and Los Alamos both contribute significantly to the state's economy. In 2024, Sandia employed almost 17,000 people and achieved $5.2 billion in economic impact, while Los Alamos employed over 16,000 people and executed a budget of $5.24 billion.

New Mexico's strong scientific foundation allows for significant growth opportunities in industries of the future. Research partnerships and large-scale investments are helping to set New Mexico apart in the space, AI, and advanced manufacturing sectors, securing its position as a national leader in innovation and security.

Spaceport America's one-of-a-kind commercial space launch facility provides a unique advantage for New Mexico to lead in commercial space activities and is already home to tenants such as Virgin Galactic. New Mexico can boast being the third state, after Florida and California, to send humans to space.

Meanwhile, the world-leading facilities and researchers at Los Alamos and Sandia are placing the labs at the forefront of AI technology. Los Alamos partnered with NVIDIA and HP to build a cutting-edge supercomputer capable of handling intense computational needs, applying these capabilities to unlock new discoveries in national security and basic research contexts. And just last month, hundreds of scientists from the two labs met to discover new ways to apply frontier AI models to pressing national security challenges.

New Mexico's laboratories are also leading the nation's advanced manufacturing sector forward. Research partnerships at the labs, from the Center for Integrated Nanotechnologies to the Microelectronic Science Research Center, are performing critical research necessary to refine advanced manufacturing techniques and create more capable, more efficient technologies from semiconductors to medical devices.

Sandia is a partner in the Microelectronics Energy Efficiency Research Center for Advanced Technologies, or MEERCAT, which seeks to adapt conventional silicon-based semiconductor manufacturing techniques for novel materials, speeding the widespread deployment of more energy-efficient semiconductors capable of blunting the voracious power demands of computing technologies like AI.

As we see across New Mexico's many industries of the future, partnerships are critical to driving innovation. New Mexico is leveraging its scientific and technological expertise, academic excellence, and industry know-how to push New Mex-

ico's economy forward, in fields from quantum to AI. For example, the New Mexico AI Consortium brings together Sandia National Laboratories, Los Alamos National Laboratory, University of New Mexico, New Mexico State, New Mexico Tech, and Central New Mexico Community College to create a thriving AI workforce, enhance AI competitiveness, and diversify the state's economy. Knowledge and technology sharing between consortium partners is driving innovation in research, algorithms, and technology applications of AI.

New Mexico's institutions are also partnering across state lines. Both laboratories, as well as the University of New Mexico, New Mexico State, Central New Mexico Community College, and New Mexico's Economic Development Department are members of the Elevate Quantum EDA Tech Hub, which is uniting New Mexico, Colorado, and Wyoming into a single quantum computing innovation ecosystem.

The state's innovators are also reaching out to form strong one-on-one partnerships beyond New Mexico. Los Alamos is partnering with Arizona State University to expand its manufacturing capabilities and build up its talent pipeline, while Sandia is bringing in talent from schools like Purdue University through its University Partnerships Network, engaging both students and faculty to build relationships with cutting-edge institutions nationwide.

Capitalizing on keystone investments across the region requires building and maintaining a sufficiently large and skilled workforce. But New Mexico faces significant issues in its workforce, with one of the lowest rankings in both personal incomes and labor force participation rate. Amongst tribal populations in New Mexico, labor force participation is 10 points lower than the already-lagging state rate. To build a more sustainable innovation ecosystem, New Mexico must find a way to engage more workers and provide a high number of better-paying jobs.

Many partners across New Mexico are already working to tackle these issues. For example, Quantinuum is planning to build a new quantum research and development center in New Mexico to train quantum workers. Meanwhile, Los Alamos is partnering with 11 institutions across New Mexico to kick off its Plutonium Workforce Development Initiative, and Sandia has rolled out a Critical Skills Recruiting Program that hires entry-level candidates. At the same time, New Mexico's universities—and, critically, its community colleges—are rolling out quantum training programs ready to provide for a quantum workforce that will soon need talent at all skill levels to thrive.

New Mexico is a highly digitally divided state, ranking 48th in internet connectivity. 73 percent of the counties in the state, most commonly rural or tribal communities, face large gaps in access to technology and internet. Digital infrastructure investments are needed to help New Mexico expand access to innovation and power the technology of the future. Some investments are already underway, such as a partnership between the state and BorderPlex Digital to construct a Digital Infrastructure Campus in Santa Teresa. However, more investment will be necessary to leverage all of the people and communities that can drive New Mexico's innovation ecosystem forward.

Just as critical as ensuring the flow of data throughout the state is ensuring the flow of water. New Mexico is projected to have 25 percent less available water to use in 50 years. This is not just a problem for the state's residents and agricultural industry; as AI data centers grow more energy-hungry, so too are they growing thirstier,

requiring more and more water to operate. That is why the State's 50-year water action plan focused on both conserving existing supplies and tapping new water sources, as well as the New Mexico Water Resources Institute involving New Mexico State University, the University of New Mexico, New Mexico Tech, New Mexico Highlands University, Eastern New Mexico University and Western New Mexico University, are both critical components of ensuring the security of the state's future water access.

So too is the state preparing for its energy future. New Mexico is a net exporter of electricity, thanks in large part to its abundant carbon-based energy resources, especially natural gas. It is also rapidly expanding its renewable energy portfolio; in 2023, 43% of the state's generated electricity came from renewable sources, with renewables making up all new planned electricity production facilities in 2024 and 2025. This combines to make New Mexico's electricity the seventh cheapest in the nation. However, aging infrastructure, especially in rural areas, has led to reliability concerns. That led the state to, less than a month ago, pass a new law supporting utilities' ability to plan for the future and update their systems with new technology, ensuring the state's energy abundance can continue to be leveraged for the good of its citizens and economy.

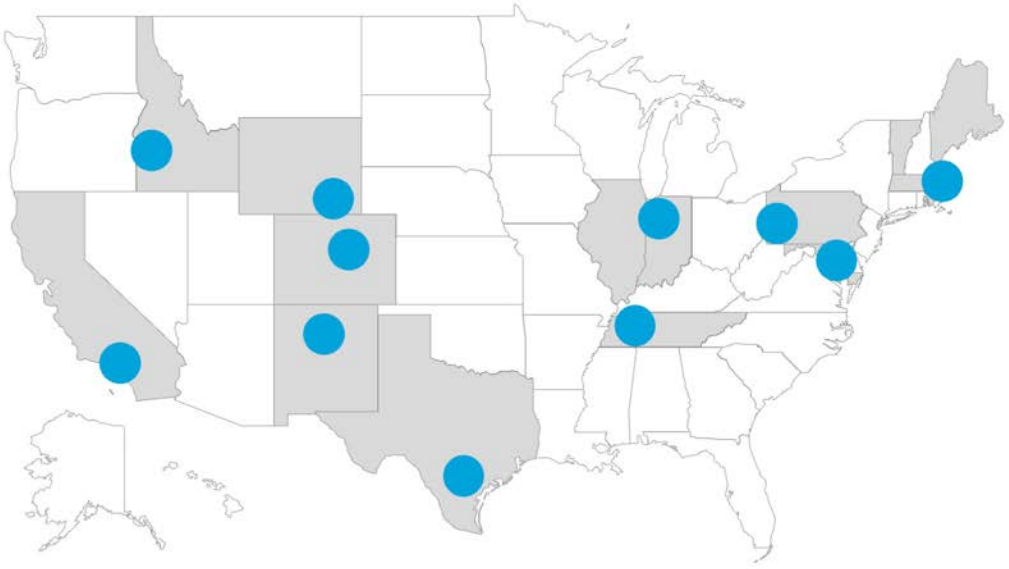
The state is home to a unique blend of cutting-edge industries, recognized as a national leader in secure innovation across aerospace, advanced manufacturing, and AI. Our goal with this Conversation is to uncover the policies and strategies that have enabled the region's growth and success and share these ideas throughout the country.

NEW MEXICO COMPETITIVENESS CONVERSATION

Compete. Council on Competitiveness

Competitiveness Conversations Across America

The Council is exploring place-based innovation in diverse regional economies and contexts.



2022 Conversation
Jun. Wyoming

2023 Conversation
Mar. Davis, CA

2024 Conversations
Apr. Nashville, TN
Aug. Boise, ID
Sep. West Lafayette, IN

2025 Conversations
Mar. San Antonio, TX
Apr. Boulder, CO
May Santa Fe, NM
Jun. Medford, MA
Oct. Pittsburgh, PA

2026 Conversations
Jan. Baltimore/College Park, MD

...and more to come

NEW MEXICO COMPETITIVENESS CONVERSATION

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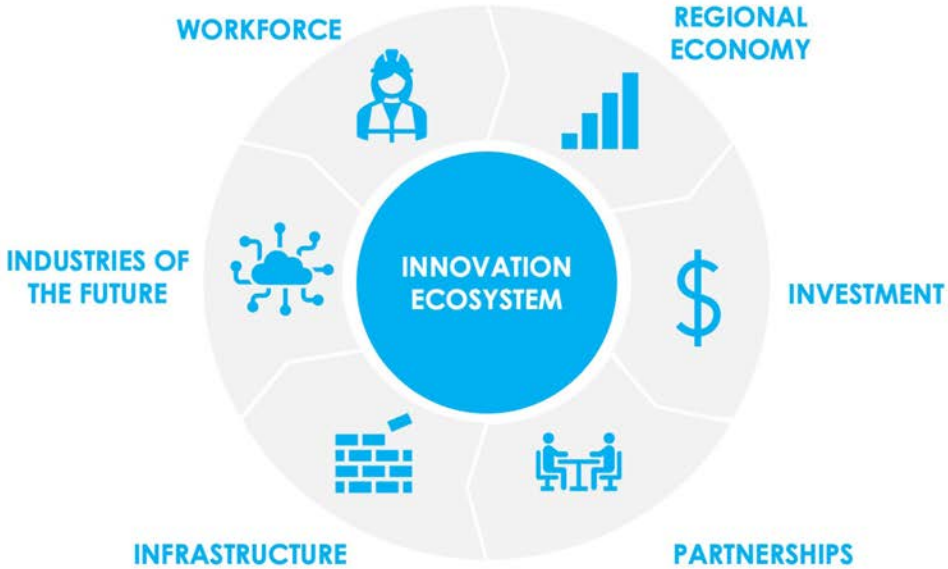
Place-based innovation is all about creating a supportive ecosystem.



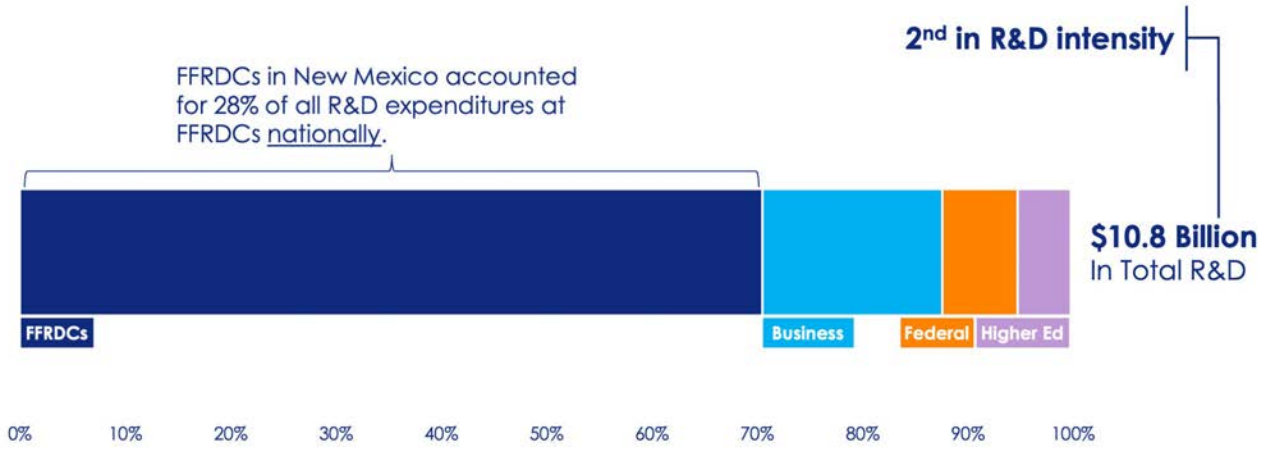
$ NEW MEXICO COMPETITIVENESS CONVERSATION: INVESTMENT

Compete. Council on Competitiveness

New Mexico is home to a rich R&D and scientific ecosystem.

The state's R&D activity is driven by Los Alamos and Sandia National Laboratories.

Share of Research & Development Performance by Type
2022



National Center for Science and Engineering Statistics

NEW MEXICO COMPETITIVENESS CONVERSATION: INDUSTRIES OF THE FUTURE

Compete. Council on Competitiveness

New Mexico is a national leader in space, AI, and advanced manufacturing.

Research partnerships and large-scale investments have driven growth across key industries.

SPACE

- NM is home to **Spaceport America**, the nation's first commercial space launch facility made up of **6,000 square miles of restricted air space.**

ARTIFICAL INTELLIGENCE

- Los Alamos is home to a **supercomputer lab** outfitted with NVIDIA superchips to support **integrating AI/ML into national security applications.**
- The **1000 Scientist AI Jam Session** brought together Sandia and Los Alamos experts to apply frontier AI models to pressing **national security challenges.**

ADVANCED MANUFACTURING

- Sandia and Los Alamos jointly host the **Center for Integrated Nanotechnologies**, leading advances in **nanotechnology design and manufacturing.**
- Sandia is leading a new **Microelectronic Science Research Center** focused on improving energy efficiency and enabling **advanced chip manufacturing.**

Spaceport America; Washington Technology; Sandia National Laboratories; Los Alamos National Laboratory

NEW MEXICO COMPETITIVENESS CONVERSATION

Compete. Council on Competitiveness

New Mexico's innovation ecosystem has distinctive strengths.

Strengths		Areas for Growth	
GDP GROWTH	Annual GDP growth in 2023 was more than 2x the national rate.	WORKFORCE	NM's labor force participation rate ranks amongst the lowest in the nation.
R&D INFRASTRUCTURE	NM is home to two DOE National Labs with significant research capacity.	DIGITAL INFRASTRUCTURE	NM ranks 48th in the nation in share of households with access to the internet.
PUBLIC R&D INVESTMENTS	NM ranks 3rd among states in terms of federal R&D funding received.	ECONOMIC DIVERSIFICATION	The state's economy and budget are heavily reliant on oil and gas production.
HIGH-TECH INDUSTRIES	R&D infrastructure attracts major private investment in key high-tech industries.	INNOVATION DISPARITIES	NM's significant tribal population trails state averages in access to jobs, infrastructure, and income.

NEW MEXICO COMPETITIVENESS CONVERSATION: REGIONAL ECONOMY

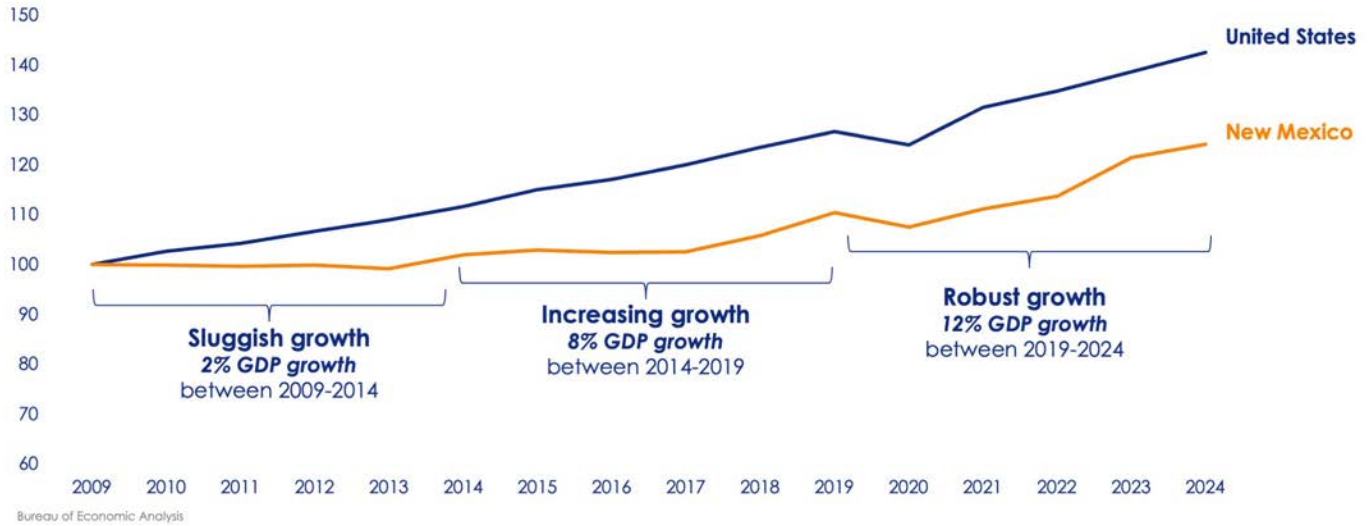
Compete. Council on Competitiveness

New Mexico has had record GDP growth over the past 5 years.

NM's GDP growth rate has accelerated significantly over the last decade.

Real GDP, Indexed Value

RGDP indexed to 100, 2009-2024



Bureau of Economic Analysis

NEW MEXICO COMPETITIVENESS CONVERSATION: PARTNERSHIPS

Compete. Council on Competitiveness

The New Mexico AI Consortium is driving innovation in artificial intelligence.

The regional hub connects universities, national labs, and industry partners leading AI innovation.

New Mexico AI Consortium

National Laboratories
- Sandia National Laboratories
- Los Alamos National Laboratory

Universities
- University of New Mexico
- New Mexico State
- New Mexico Tech
- Central New Mexico Community College

Sandia National Laboratories
Note: This map is an illustrative graphic. Locations, partners, and collaborators are not comprehensive.

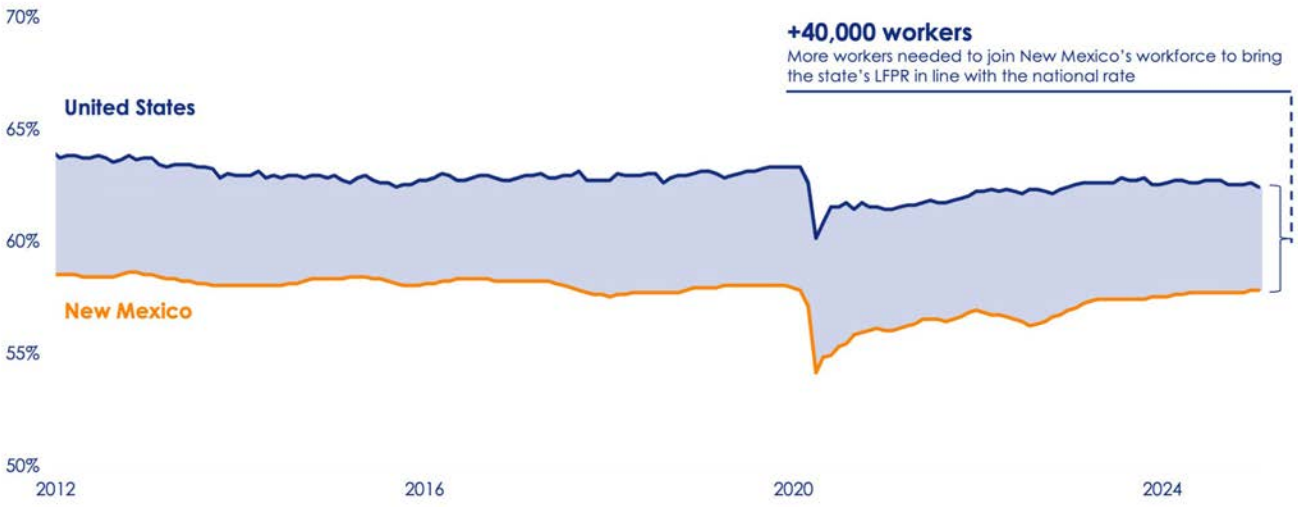
NEW MEXICO COMPETITIVENESS CONVERSATION: WORKFORCE

Compete. Council on Competitiveness

Labor force participation in New Mexico is amongst the lowest in the nation.

NM's labor force participation rate trails the national average by ~5 percentage points.

New Mexico Labor Force Participation Rate (LFPR)
Annualized, 2000-2024



Bureau of Labor Statistics; New Mexico Legislative Finance Committee

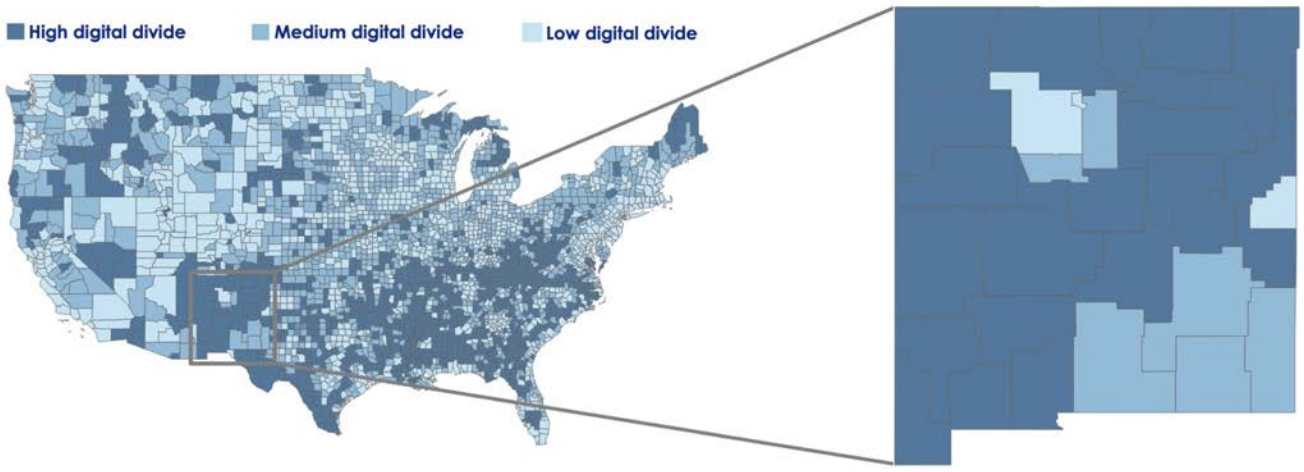
NEW MEXICO COMPETITIVENESS CONVERSATION: INFRASTRUCTURE

Compete. Council on Competitiveness

Investment in digital infrastructure is needed to power innovation in New Mexico.

Almost three quarters of counties in New Mexico face large gaps in access to technology and internet.

Digital Divide Index in New Mexico
By county, 2024



Purdue University, Digital Divide Index; U.S. Census Bureau

NEW MEXICO COMPETITIVENESS CONVERSATION

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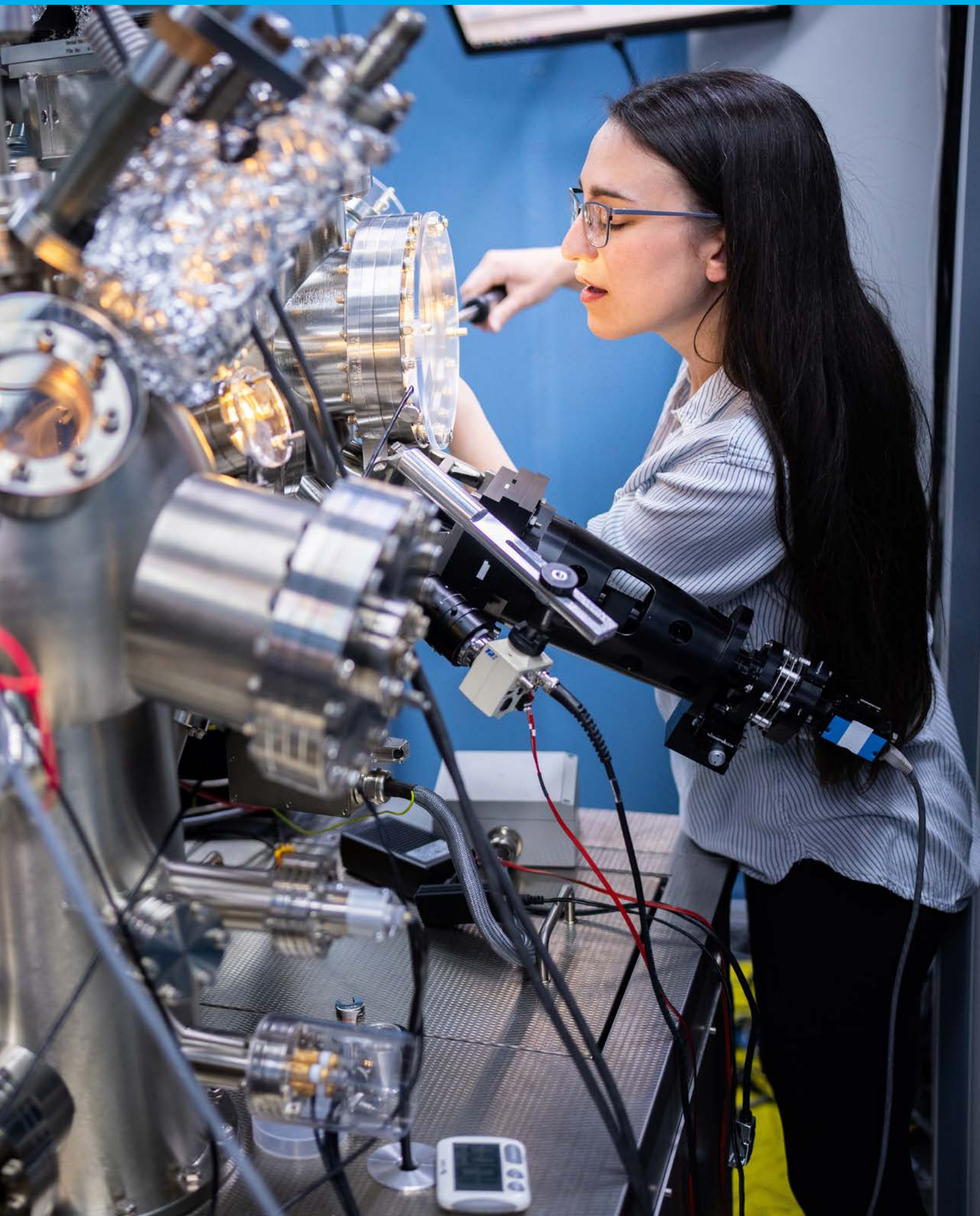
MISSION: Consolidate and strengthen New Mexico's innovation ecosystem

Capitalize on opportunities and address challenges in the region.

- BUILD A ROBUST WORKFORCE TO POWER THE INDUSTRIES OF THE REGION'S FUTURE
- EXPAND REGIONAL AND NATIONAL PARTNERSHIPS
- CAPITALIZE ON LEADING R&D CAPABILITIES TO ATTRACT MORE BUSINESS INVESTMENT
- ADDRESS DIGITAL INFRASTRUCTURE GAPS
- EMPOWER NEW BUSINESSES AND ENTREPRENUERS

Behind the Scenes



Cross-Cutting Themes and Ideas

1. **Strategic focus and sustained investment are critical to maintaining U.S. leadership in emerging technologies.** Los Alamos National Laboratory is sharpening its focus on high-impact research areas—including biotechnology, quantum sensing, artificial intelligence, and space science—where scientific discovery intersects with national competitiveness. These domains not only offer technical breakthroughs but also opportunities for cross-sector collaboration and commercialization. A powerful precedent lies in Los Alamos' early role in the Human Genome Project, where its partnership with other national labs and industry helped unlock transformative biomedical advances. Today, AI plays a similar catalytic role, allowing researchers to interpret complex data, detect failed experiments earlier, and generate entirely new research pathways. However, without sustained and strategic investment—especially in light of China's escalating R&D spending—the United States risks ceding leadership in technologies that will shape future economic power and national security. The erosion may not be immediate, but once it begins, reversing course will be both costly and slow.

2. **New Mexico's innovation ecosystem needs structural reinforcement to withstand external shocks and scale impact.** While New Mexico boasts world-class research assets and growing momentum in key sectors, its innovation ecosystem remains structurally vulnerable to national headwinds. With a small population and limited access to dense markets or capital networks, the state lacks the buffers that insulate larger innovation hubs from shifts in federal funding, economic cycles, or investor sentiment. As a result, New Mexico is often "blown around" by broader national trends—highly dependent on federal streams, prone to talent outmigration during downturns, and increasingly pressured by coastal regions with deeper venture capital pools. These structural gaps also contribute to policy fragmentation and a lack of statewide coordination, making it harder to sustain momentum or scale commercialization efforts. To compete at a national level, New Mexico must invest in building connective tissue—linking institutions, markets, and capital—to anchor innovation locally and translate breakthroughs into durable economic outcomes.

3. **Protecting the future of American science and national security demands a fundamental shift in how institutions govern emerging technologies like artificial intelligence.** Traditional, static regulatory frameworks—built for slower-moving innovations—can no longer keep pace with the exponential growth, dual-use nature, and systemic risks posed by AI. A more adaptive, outcomes-based governance approach is needed—one that focuses on broader societal and sectoral impacts rather than narrow use cases. At Sandia National Laboratories, researchers are already pioneering this shift by developing AI assurance frameworks that integrate explainability, safety, and bias detection into AI systems used for national security. These proactive efforts demonstrate how institutions can lead by example in setting standards and risk protocols that evolve alongside rapidly changing, transformative technologies.
4. **Leveraging public-private partnerships unlocks new frontiers for innovation, particularly in AI.** Scientific leadership in AI increasingly depends on deep collaboration between public institutions and the fast-moving private sector. Private partnerships with the U.S. Department of Energy's National Laboratories offer opportunities to enhance AI's innovative potential by training generative models on data and simulations far beyond what publicly available datasets provide. For example, Los Alamos National Laboratory actively collaborates with industry leaders like NVIDIA, whose breakthroughs in AI set the global pace for innovation. Rather than compete, Los Alamos aligns its research efforts with these companies to accelerate discovery and integrate cutting-edge tools into its scientific workflows. These partnerships not only keep national labs agile but also amplify the impact of federally funded research by bridging public resources with private-sector speed and scale.
5. **Integrating AI into education is essential to prepare New Mexico's students for the future economy.** Artificial intelligence is transforming education by reshaping how students learn, how teachers instruct, and which skills are prioritized. In New Mexico, innovative programs are already embedding AI tools throughout K–12 and higher education. For example, Santa Fe AI Partners teaches middle and high school students to apply AI in image recognition and machine learning through challenge-based learning that encourages real-world problem solving with large language models. At the University of

New Mexico, co-pilot training equips faculty to integrate AI into curricula, providing students early and meaningful exposure to these technologies. While educators face challenges around academic integrity in an AI-enabled environment, early adoption fosters critical thinking, builds confidence, and ensures students graduate with the skills needed to succeed in an increasingly AI-driven economy.

6. **New Mexico is emerging as a powerhouse in quantum science—home to world-class laboratories and cutting-edge talent—but research excellence alone will not secure economic leadership.** To unlock the full potential of its quantum ecosystem, the state must pair scientific advances with commercialization infrastructure, startup support, and state-level coordination. For instance, Los Alamos National Laboratory is pushing the frontiers of quantum networking and error correction, but many of these breakthroughs risk stalling in the lab without sufficient venture capital, incubators, or tech transfer channels. With federal labs constrained in how they commercialize technologies, state leaders have the opportunity to step in and build the scaffolding that turns quantum research into high-growth companies and long-term economic value.

7. **The bottleneck in New Mexico's quantum ecosystem is not research—it is scale and speed, hampered by limited infrastructure, undercapitalized startups, and fragmented policy support.** Despite having one of the highest per capita R&D investments in the country, New Mexico lacks the full capacity to convert its scientific leadership into commercial impact. For example, Sandia's work in trapped-ion systems, part of its role in national quantum hubs, offers a compelling research advantage—but without coordinated efforts to support spinouts or provide seed funding, these innovations struggle to leave the lab. Addressing this gap requires a policy environment that accelerates firm formation, tech transfer, access to facilities beyond the federal system, a strong talent pool, bridge funding, etc.

8. **To capitalize on New Mexico's sovereign wealth fund—the second largest in the United States—the state must shift from passive reserve management to actively deploying capital for innovation and inclusive growth.** By strategically investing in education, workforce development, and commercialization infrastructure, New Mexico can turn its financial assets into long-term economic resilience. Expanding initiatives like the New Mexico Small Business Assistance Program—which connects startups with technical expertise from Sandia and Los Alamos—can amplify the impact of public dollars, turning lab-based science into new businesses and quality jobs across the state.

9. **Risk aversion poses a significant threat to competitiveness, particularly in sectors shaped by fast-moving technologies.** Organizations that hesitate to adopt emerging tools risk being leapfrogged or locked into outdated systems. Sandia National Laboratories is avoiding some risks associated with being a first mover while increasing its agility through its use of digital twin technology—virtual models that allow real-time prototyping and risk modeling for manufacturing systems. By using digital twins, Sandia not only shortens development cycles but creates a culture of experimentation, reducing the fear of failure that too often paralyzes progress in legacy institutions.

10. **The space sector is becoming increasingly democratized, as low-cost launch technologies and commercial innovation open access to startups, universities, and small businesses.** With its robust infrastructure, New Mexico is well-positioned to lead in this next era. Spaceport America offers a rare launch-ready facility, while Los Alamos National Laboratory supports space innovation through satellite payload development and high-altitude testing. When combined with academic programs at New Mexico Tech and workforce readiness initiatives, the state has all the components needed to build a space economy that is inclusive, scalable, and commercially integrated.
11. **The space economy's growth depends on expanding roles for non-traditional actors and strategic partnerships.** Despite the momentum behind the space economy, government support remains vital. Early-stage funding from entities like the Space Force and catalytic public-private partnerships help reduce investment risk, enabling companies to secure initial government contracts that attract venture capital. This strategic interplay between government and industry is critical to building a resilient and sustainable space economy ecosystem.
12. **Manufacturing is evolving rapidly—driven by automation, AI, and next-generation materials—yet much of the sector remains anchored in outdated processes.** New Mexico, with its unique mix of federal research labs, nimble manufacturers, and statewide innovation leadership, can serve as a national testbed for advanced manufacturing. At Los Alamos, researchers are developing new applications of additive manufacturing for high-performance materials, while Sandia partners with small manufacturers to deploy AI-powered quality assurance tools. These collaborations close the gap between R&D and deployment, positioning New Mexico as a model for how to modernize production while building regional competitiveness.
13. **Advanced manufacturing is a strategic asset—not just an economic opportunity—particularly in critical sectors like defense and semiconductors, where supply chain vulnerabilities can become national security threats.** Strengthening domestic production capacity in states like New Mexico is a key hedge against geopolitical risk. Sandia is already playing a central role by investing in secure microelectronics and trusted semiconductor fabrication, ensuring that essential components can be sourced domestically under rigorous standards. Scaling this capacity with state and federal support can enhance both national resilience and economic diversification.

PANEL

Putting Competitiveness in Context: Challenges and Opportunities

Dr. Patrick Fitch
Deputy Director for Science, Technology, and Engineering, Los Alamos National Laboratory

Mr. Josh Parsons
Associate Laboratories Director, Sandia National Laboratories

Moderator: The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

Session Overview

Council on Competitiveness President and CEO Deborah L. Wince-Smith joined U.S. Department of Energy national laboratory leaders to kick off the New Mexico edition of the Competitiveness Conversations Across America series—taking place under the auspices of the National Commission on Innovation and Competitiveness Frontiers—framing the grand challenges and opportunities facing New Mexico and the United States.

Key Discussion Points

To open the Conversation, Council on Competitiveness President and CEO Deborah Wince-Smith stepped to the podium to introduce the audience of innovation leaders from across the state and region to the Council on Competitiveness, which for 39 years has defined U.S. competitiveness and shaped the agenda driving productivity, growth, security, and the global success of U.S. goods and services.

One of the most significant challenges the Council is working to address today is the risks posed by a hyper-concentration of America's innovation assets in a few densely populated, extremely costly innovation hubs like San Francisco and Boston. The United States cannot afford to continue with such deep

economic and social disparities, and the country must bring many more communities and Americans into the innovation ecosystem to meet the challenges and opportunities brought on by accelerating global competition.

One state with an accelerating innovation-based economy—and which other states could garner insights to emulate—is New Mexico. The state has a long-standing legacy of advancing American competitiveness and national security, dating back to the Manhattan Project at Los Alamos, where wartime research helped the United States prevail over the fascist powers in World War II. That legacy continues today through Los Alamos National Laboratory and Sandia National Laboratories, which play a central role in designing, testing, and maintaining the nation's nuclear deterrent. However, the influence of these two U.S. Department of Energy National Laboratories extends well beyond national security—these institutions advance cutting-edge research, including some of the world's most powerful supercomputing applications in machine learning and AI, while also serving as major economic engines for the region. They employ over 30,000 people and generate more than $10 billion in annual economic impact.

New Mexico's two R1 research universities, the University of New Mexico and New Mexico State University, along with a strong base of technical and community colleges, contribute to a robust talent and innovation pipeline. This ecosystem has played a part in the state's impressive 7 percent year-over-year GDP growth from 2022 to 2023, more than doubling the national rate of 3 percent. New Mexico ranks third in federal R&D funding, with research and development accounting for about 6 percent of the state's GDP—the highest share of value-added by research of any state in the country.

"The United States cannot continue to have economic and social disparities so embedded across our nation. We must bring all Americans into the innovation ecosystem that we have built that made the nation so successful."

The Hon. Deborah L. Wince-Smith
President and CEO
Council on Competitiveness

Ms. Wince-Smith, in her opening remarks, highlighted the surge of high-tech industries establishing roots in New Mexico, including Intel's $4 billion investment in semiconductor research and development. The state is also home to over 50 aerospace companies, including SpaceX and Virgin Galactic, attracted by the talent pool and the expansive restricted airspace at Spaceport America. The aerospace industry alone has created 16,000 jobs and contributed $2 billion to the state's GDP, with Kirtland Air Force Base generating over $900 million annually in research funding. Advanced manufacturing, driven by companies like Intel and Ebon Solar, adds an additional $3 billion to New Mexico's GDP.

Following her opening remarks, Ms. Wince-Smith invited the panel to begin the day's first discussion. Joined by Dr. Patrick Fitch, Deputy Director for Science, Technology, and Engineering at Los Alamos National Laboratory, and Mr. Josh Parsons, Sandia National Laboratories Associate Laboratories Director, Ms. Wince-Smith asked for insights from these two leaders about the challenges and opportunities facing New Mexico's innovation ecosystem.

New Mexico's national laboratories are not merely centers of research—they are deeply woven into the cultural, historical, and economic fabric of the state.

As Josh Parsons of Sandia National Laboratories remarked, "So much of the U.S. Department of Energy national laboratory enterprise is tied to New Mexico." This bond originates in part from the U.S. Department of Energy National Laboratories' roots in the Manhattan Project, which introduced a lasting mystique around New Mexico's role in national security. Over the decades, the laboratories have become cornerstones of both national service and local heritage, serving dual roles: advancing essential missions in national defense and scientific innovation, while also acting as significant contributors to New Mexico's economy and communities.

This enduring legacy and brand power are particularly evident in Los Alamos National Laboratory, where the intersection of history and innovation continues to shape its role. Ms. Wince-Smith highlighted the recent Oppenheimer film as a catalyst for renewed interest in the lab's historic role. While that may be true, Dr. Fitch noted that many Americans are still unaware of the full scope of work done by the national laboratories.

Enhancing public understanding of the work done at U.S. DOE National Laboratories is crucial to reinforcing New Mexico's innovation ecosystem and brand.

"The heritage of New Mexico and the U.S. Department of Energy National Laboratories are synergistic in nature."

Mr. Josh Parsons
Associate Laboratories Director
Sandia National Laboratories

Only when the public and potential partners understand the depth of the DOE labs' capabilities—and how they can work with and benefit from the talent and infrastructure available through them—will they fully invest in the region. Therefore, increasing the visibility of the labs' work can lead to more collaborations between universities, private sector businesses, and even the labs, which is necessary to create a thriving, interconnected network of innovation. Furthermore, showcasing the transformative work being done at the laboratories can inspire future generations of scientists, engineers, and entrepreneurs, ensuring a continuous influx of talent and ideas into New Mexico's workforce. This, in turn, creates a virtuous cycle, strengthening the state's competitive edge, positioning it as an attractive location for high-tech industries and new business ventures, while preserving the legacy of the labs as both a national and local asset.

Building on this foundational legacy, today's U.S. DOE national laboratory leaders are re-imagining how these institutions can continue to drive innovation in a rapidly changing technological landscape. Dr. Fitch described innovation as a forward-looking mission that depends on three pillars: people, partnerships, and selecting the right areas of focus. In line with the first pillar, Los Alamos National Laboratory plays a crucial role in developing the state's workforce, focusing on both recruitment and retention strategies to ensure a pipeline of skilled professionals for the future. The laboratory offers extensive training in business planning and entrepreneurial thinking, equipping employees with valuable skills whether they choose to venture beyond the lab or grow their careers within it.

However, recruiting and retaining top talent remains challenging for both Los Alamos National Laboratories and Sandia National Laboratories, particularly in competition with private industry. At Sandia, efforts like the "Unleash Excellence" program are helping cut through red tape and make federal lab careers more dynamic and appealing. Attrition has fallen below 5 percent, and Mr. Parsons noted that the goal is to make Sandia not just a workplace, but a long-term professional home. Similarly, Los Alamos National Laboratory has proactively addressed its demand for skilled workers by forging partnerships with local colleges and universities. This collaboration is central to building a sustained talent pipeline and engaging the community in the lab's mission. Additionally, Los Alamos National Laboratory has introduced more flexible and non-committal employment pathways, particularly for non-scientific staff, which have proven effective in retaining a more diverse workforce.

"We think innovation is an important part of the future in three ways: people, partnerships, and how we select focus areas."

Dr. Patrick Fitch
Deputy Director, Science, Technology, and Engineering
Los Alamos National Laboratory

The second pillar—partnerships—acknowledges that scientific leadership increasingly depends on collaboration with a private sector that is moving faster than ever. Companies like NVIDIA are breaking ground in artificial intelligence, often setting the pace for global innovation. Rather than compete, Los Alamos National Laboratory is actively seeking ways to align with these firms to accelerate its own research and bring new tools and technologies into its workstreams. Such partnerships help the lab remain agile and expand the reach of its scientific mission.

Furthermore, Los Alamos National Laboratory is strategically concentrating its research in high-impact areas, including biotechnology, quantum sensing, artificial intelligence, and space science. Each of these fields offers rich potential for cross-sector collaboration. The laboratory's early involvement in the Human Genome Project—alongside Lawrence Livermore and Lawrence Berkeley National Laboratories—offers a compelling precedent. There, the integration of federal infrastructure and industrial capability accelerated scientific breakthroughs. Today, emerging technologies like AI serve similar roles: enabling researchers to interpret complex data, spot failed experiments early, and generate entirely new lines of inquiry.

Yet even with these advances, concerns remain. Dr. Fitch warned that without steady investment—particularly when compared to China's aggressive spending on research—the United States could fall behind in the fields that will underpin the future economy and national security. The effects would not be immediate, but once the gap becomes clear, it will be difficult to recover.

Wrapping up the panel, Ms. Wince-Smith noted that by strengthening this interconnected ecosystem and increasing national awareness of the U.S. DOE National Laboratories' transformative work, New Mexico can continue to lead in emerging technologies, while anchoring long-term economic development, talent retention, and global competitiveness.

PANEL

Developing the New Mexico Innovation Ecosystem

PANELISTS

Dr. Luis Chavez
CEO and Founder, Hydrosonics

Mr. Robey Clark
Director, Strategic Initiatives, Kairos Power

Mr. Yeri Lopez
Director, Partnerships, J2 Ventures

Mr. Abhi Mukherjee
Operating Partner, CerraCap Ventures

Ms. Nora Sackett
Director, Office of Strategy, Science, and Technology, New Mexico Economic Development Department

Moderator: Dr. Duncan McBranch
Senior Director, Partnerships and Pipelines, Los Alamos National Laboratory

Session Overview

Leaders explored the key drivers of New Mexico's innovation ecosystem. They highlighted major challenges and opportunities in the region, as well as suggest best practices to scale nationally to dramatically increase the innovation capacity of the United States.

Key Session Insights

At the heart of New Mexico's value proposition is its sense of place. Innovation in the state is shaped by more than technology or capital—it is powered by people, culture, and an entrepreneurial grit.

As Mr. Yeri Lopez, Director of Partnerships at J2 Ventures noted, what draws people to New Mexico are the intangibles: its size, culture, and personalities. This spirit of resilience, deeply embedded in the region's identity, makes it a place where innovators not only arrive but often choose to stay. The state's "frontier willingness to build" distinguishes it from more established tech hubs.

A key asset that further distinguishes New Mexico is its abundant land. As Robey Clark, Director of Strategic Initiatives at Kairos Power, pointed out, "for start-ups like Kairos to grow, we need land. Land is in abundance in New Mexico." The state's vast, open spaces provide opportunities for large-scale facilities, experimental sites, and industrial zones that are often scarce or prohibitively expensive in more crowded regions. This geographic advantage supports both early-stage and established companies looking for room to innovate, scale, and secure long-term operational flexibility. Land, coupled with New Mexico's rich history and established industrial base, offers a strategic foundation for the growth of startups, making it a compelling place for businesses to establish themselves and thrive.

"There is an understanding of resiliency built into New Mexico."

Mr. Yeri Lopez
Director, Partnerships
J2 Ventures

Despite these strengths, New Mexico faces structural challenges, which make its innovation ecosystem especially sensitive to external forces. With a relatively small population, the state lacks the dense local markets and capital networks that help fuel larger innovation hubs and buffer them from shifts in national policy, economic cycles, or investor sentiment. New Mexico is often "blown around" by larger national trends, depending heavily on federal funding streams, is highly susceptible to talent outmigration during downturns, and faces increasing pressure from coastal hubs with greater access to venture capital. The state's lack of critical mass also leads to greater policy fragmentation, making it difficult to coordinate action, sustain state-wide momentum, or commercialize homegrown breakthroughs at scale.

"New Mexico plays a unique catalytic role in the innovation ecosystem of the state."

Dr. Duncan McBranch
Senior Director, Partnerships and Pipelines
Los Alamos National Laboratory

"Kairos is in New Mexico for three reasons: the history of existing industry and innovation, the availability of labor, and the physical space."

Mr. Robey Clark
Director, Strategic Initiatives
Kairos Power

However, one of the state's key strengths lies in its U.S. DOE National Laboratories—Los Alamos (LANL) and Sandia—which have the potential to anchor a more cohesive innovation ecosystem. These labs provide more than just advanced research—they serve as catalysts for economic development, workforce training, and technology commercialization. Ms. Nora Sackett, Director of the Office of Strategy, Science, and Technology at the New Mexico Economic Development Department, highlighted programs like LEAP and the Technology Readiness Gross Receipts (TRGR) tax credit, both funded by LANL and Sandia. LEAP connects early-stage companies with U.S. Department of Energy national laboratory resources, offering access to laboratory space, technical infrastructure, and specialized expertise. TRGR helps bridge the gap between research and commercialization by subsidizing access to lab facilities and business development support. This is especially valuable for deep tech startups, which require complex environments to test and scale their technologies. These programs reduce barriers to entry and bolster investor confidence by offsetting personnel costs and enhancing startup credibility. Dr. Luis Chavez, CEO of Hydrosonics, is a success story of these initiatives, and he pointed out how the funding and training Los Alamos provided to him as an entrepreneurial postdoc fellow was essential for Hydrosonics' development.

"There is a lot of excitement for the state, but we are still trying to figure out how to work together. There are a lot of ingredients of innovation, but we are still figuring out the recipe."

Dr. Luis Chavez
CEO, Hydrosonics

"The root of all of the innovation happening in New Mexico is our U.S. DOE National Laboratories. That is the source code of the innovation that we are building in the state."

Ms. Nora Sackett
Director, Office of Strategy, Science, and Technology
New Mexico Economic Development Department

While scientific and technological talent is abundant, the state's entrepreneurial ecosystem still faces persistent gaps. Chief among them is the lack of experienced business leadership capable of scaling innovative ideas into viable enterprises. Many startups fail not because of poor science, but due to weak product-market fit and inadequate commercialization strategies. Mr. Mukherjee argued bridging the gap between research and market-ready products requires more than funding—it demands stronger CEO talent, a business-savvy investor base, and greater entrepreneurial acumen within academic settings. While New Mexico has a strong capital base and scientific infrastructure, it lacks the external networks and visibility needed to attract seasoned business leaders and veteran investors.

Mr. Mukherjee also called for a shift from invention to market execution, noting that many innovative startups struggle with securing early-stage funding and operational support. New Mexico must focus its funding on developing entrepreneurship throughout the state, which is the missing piece for its commercialization pipeline. Mr. Lopez also pointed to dual-use applications of many new technologies being developed in the state—especially in defense and security—as a strategic way to reduce risk and enhance investor confidence. By aligning state incentives with these sectors and connecting startups to seasoned business operators, New Mexico can better position its innovation ecosystem for scalable growth.

"New Mexico is not just a land of enchantment, it is a land of ingenuity."

Mr. Abhi Mukherjee
Operating Partner, CerraCap Ventures

A robust innovation economy also depends on talent—both in quantity and alignment. Mr. Robey Clark, Director of Strategic Initiatives for Kairos Power, noted while New Mexico boasts strong academic institutions and access to U.S. DOE national laboratory expertise, workforce availability remains a critical constraint. Companies like Kairos are addressing this challenge through iterative, in-house training and vertical integration, developing their own capabilities to meet their manufacturing needs. Meanwhile, partnerships between the labs and universities, supported by state legislative initiatives, are working to align educational pathways with industry demands. Ms. Sackett noted ongoing efforts by the legislature to collaborate with private leaders to identify and resolve workforce skill-gaps, too.

Yet workforce readiness alone is not enough—talent must be supported by the infrastructure needed to enable innovation at scale. **New Mexico is making targeted infrastructure investments in its energy and water systems to ensure that industrial sites are ready for business.** Ms. Sackett pointed to state investments in "ready-to-go" industrial zones and the establishment of a Strategic Water Fund aimed at addressing the energy-water nexus. This fund supports water reuse, underground storage, and pilot projects in advanced treatment, all of which are critical for sustaining industrial growth in an arid region.

New Mexico's innovation future hinges on its ability to harness its distinctive assets—its people, its laboratories, its frontier ethos—and align them with intentional strategy, infrastructure, and market connectivity. By deepening partnerships, strengthening entrepreneurial capacity, and investing in place-based infrastructure, New Mexico can solidify its role as a national leader in innovation-driven economic development.

PANEL

The Future is AI: Exploring the Possibilities and Pitfalls

PANELISTS

Dr. Kevin Dixon
Director, Sandia National Laboratories

Ms. Meg Fisher
Co-Founder, Santa Fe AI Partners

Ms. Geetika Gupta
Director, Product Management, NVIDIA

Dr. Aric Hagberg
Division Leader, Los Alamos National Laboratory

Dr. Melanie Moses
Professor, Computer Science, University of New Mexico

Moderator: Dr. Jason Pruet
Senior Director, AI Office, Los Alamos National Laboratory

Dr. Will Tracy
Vice President, Applied Complexity, Santa Fe Institute

Session Overview

From writing novels to designing new molecules, artificial intelligence is transforming nearly every sector and fueling a new era of innovation. This panel led a thought provoking discussion on the challenges, opportunities, and potential risks of AI's future impact on New Mexico and the United States.

Key Session Insights

More than a tool, AI is an inflection point in human history—one that is reshaping governance, democracy, labor markets, and humanity itself. The technology's potential to streamline operations and personalize services also has the power to displace jobs, magnify bias, and destabilize public trust. Dr. Will Tracy, Vice President for Applied Complexity at the Santa Fe Institute, compared AI's emergence to that of the printing press: a disruptive force whose long-term effects may take decades to fully understand but whose immediate consequences are already apparent. There is an urgent need, he argued, to bring ethical frameworks, civic norms, and regulatory mechanisms into alignment with the speed of technological development. Without these safeguards, society risks a future in which the benefits of AI are enjoyed by the few while the burdens fall on the many.

Bridging the gap between elite research environments and the broader public becomes essential if AI is to serve as a truly transformative force across society. While the U.S. DOE National Laboratories like Los Alamos and Sandia are actively investing in AI to accelerate research and scientific discovery, technology must be democratized beyond elite institutions. Dr. Jason Pruet, Senior Director of the AI Office at Los Alamos National Laboratory, noted that for AI to fulfill its potential responsibly, its use in advanced research must be accompanied by efforts to build public understanding and ensure equitable access across New Mexico. Without such engagement, the benefits of these powerful tools may be unequally distributed or misunderstood.

"AI will disrupt many dimensions but holds incredible potential."

Dr. Jason Pruet
Senior Director, AI Office
Los Alamos National Laboratory

This need for inclusion is amplified by the accelerating pace of AI development, which is quickly reshaping the demands placed on institutions, workers, and policymakers. In both the public and private sectors, there is growing concern that the pace of AI innovation is outstripping the ability of workers, educators, and even government agencies to keep up. Dr. Kevin Dixon, Program Director of Sandia National Laboratories, remarked that although the "pie" of opportunity may grow larger, its slices will not be distributed equally unless deliberate efforts are made to build capacity across all sectors of society. As AI tools become more powerful and ubiquitous, it becomes critical to upskill workers not just in how to use these tools, but in how to interpret, question, and adapt

"We are trying to uplevel AI skills into the classroom."

Ms. Meg Fisher
Co-Founder
Santa Fe AI Partners

"AI is trained on the knowledge of humanity. Until now, we have never had a technology that reflects what all of humanity knows."

Dr. Melanie Moses
Professor, Computer Science
University of New Mexico

them to their specific contexts. Failing to do so could lead to widened inequality, eroded trust in institutions, and technological disillusionment.

AI is fundamentally altering the landscape of education, reshaping how students learn, how teachers instruct, and what skills are essential in the modern world. In New Mexico, educators and technologists are piloting programs that embed AI tools into K–12 and higher education. Ms. Meg Fisher, Co-Founder of Santa Fe AI Partners, highlighted the work her organization is doing to teach students in middle and high school to use AI for image recognition and machine learning. This curriculum is buttressed by challenge-based learning, which encourages students to solve real-world problems using large language models (LLMs) and machine learning tools. Similarly, programs like Microsoft Copilot at the University of New Mexico (UNM) are helping faculty and staff integrate AI tools into curricula, while also providing students with exposure to these technologies early on. While these programs show promise, educators are grappling with the challenge of maintaining academic integrity in an environment where students have access to advanced AI tools that can assist in completing assignments. Despite these challenges, early exposure to AI fosters critical thinking, reduces fear of the technology, and equips students with the skills necessary to thrive in an AI-driven world.

As education systems work to prepare the next generation for an AI-driven world, similar challenges emerge in the broader workforce, where the rapid pace of AI's development is reshaping not only how we learn, but how we work and innovate in scientific fields. **Artificial intelligence is no longer simply a tool used to accelerate tasks—it is becoming a true collaborator in the research process, capable of transforming how knowledge is generated.** Los Alamos

"AI models have biases. These tools are very powerful, and it is helpful that people are trained to conceptually understand how these models built."

Ms. Geetika Gupta
Director, Product Management
NVIDIA

"Researchers will be able to compress science by a factor of 10 with artificial intelligence."

Dr. Kevin Dixon
Director, Sandia National Laboratories

National Laboratory Division Leader Dr. Aric Hagberg described how researchers have gone from using AI to merely *make things go faster*, to using AI to *build things faster*. This transition marks a deeper integration of AI into scientific inquiry, where models are not just computational aids but reasoning partners in exploration and design.

However, as Dr. Dixon pointed out, despite AI's growing potential, institutions like Los Alamos are not fully leveraging its capabilities. Many research teams continue to underutilize AI technology, struggling to implement it in their workflows in a way that maximizes its transformative potential. This problem raises a critical question: How can we improve AI adoption within research institutions? Increasing AI usage requires not only better access to technology but also fostering a culture where researchers embrace AI as an essential part of their process, rather than just a tool to speed up tasks.

To build this culture of adoption, individuals must understand the foundational principles of AI. By training students to understand the strengths and weaknesses of these models, such as the bias in models, they can more effectively apply AI in ways that align with its capabilities. Ms. Geetika Gupta, Director of Product Management for NVIDIA highlighted that when students grasp how AI models are built, they are better equipped to discern what tasks these models excel at, and more importantly, what tasks they are not suited for. This knowledge reduces fear of using AI and helps people approach these tools more thoughtfully. Teaching these skills will play a significant role in improving AI adoption, ensuring that the next generation not only uses AI but understands it deeply—empowering them to use it responsibly and effectively in their own work.

"We do not want to focus on a few select labs and incrementally climb to a local optimum. We need all institutions playing with this technology to think of themselves as a small-scale experiment, and to collaborate."

Dr. Will Tracy
Vice President, Applied Complexity
Santa Fe Institute

These challenges of workforce readiness and public inclusion are compounded by the sheer magnitude of change AI is driving within scientific fields themselves. **Dr. Dixon noted the scientific impact of AI may be even more dramatic than currently realized, potentially compressing workflows by a factor of ten. Yet this acceleration exposes a critical vulnerability: most institutions are not yet structured to absorb such rapid transformation.** Dr. Dixon is concerned that the United States will not revolutionize its institutions to meet this challenge until it is too late. For example, what if foreign adversaries use AI to make America's missile defense system obsolete?

Bridging the gap between technological capability and institutional readiness requires a coordinated, cross-sector approach. Dr. Tracy outlined the importance of building an AI innovation ecosystem in New Mexico that leverages its strengths—world-class U.S. DOE National Laboratories, top-tier research universities, vibrant cultural institutions, and entrepreneurial nonprofits. Rather than operating in silos, he proposed that these organizations must see themselves as co-architects of a shared experiment in AI governance and implementation. AI holds immense promise, but establishing collaborative norms and standards is necessary. He called for all institutions to think of themselves as part of a larger, interconnected experiment. China has already embraced this cooperative approach, and Dr. Tracy warned that the United States risks falling behind if it does not follow suit.

In this line of thinking, Ms. Gupta described how public-private collaboration, particularly with the U.S. Department of Energy national laboratory enterprise, could dramatically improve the innovative potential of AI. Currently, commercial companies are training their generative AI models with publicly available data. However, these models have the potential to be more powerful if they were trained on the data and simulations generated by the national laboratories.

Advancing AI in a responsible and transformative way also requires rethinking who gets to shape these systems and how they are understood. **Dr. Moses argued that the United States can develop competitive AI systems not just through greater computational power, but through more thoughtful and interdisciplinary approaches to model development. Rather than relying solely on computer scientists, Dr. Moses called for broader engagement across disciplines,** including historians of science, who can contextualize AI's development; psycholo-

"I hope that small town farmers play with AI technology. It has the power to change their life."

Dr. Aric Hagberg
Division Leader, Los Alamos National Laboratory

gists, who can explore how AI mimics or diverges from human cognition; and biologists, who can help society grapple with AI as a novel form of synthetic "life." She noted that this shift toward interdisciplinary thinking is already underway, and expressed optimism that a more integrated, nuanced approach to AI is becoming the norm. Without it, she warned, we risk misunderstanding the capabilities and consequences of the systems we are building.

Despite ongoing challenges, the panelists expressed a clear belief in AI's potential to uplift communities and support innovation at the grassroots level. In New Mexico, rural residents, tribal nations, and small-town entrepreneurs are emerging as vital contributors in exploring how AI can advance the public good. Applications such as precision agriculture, rural healthcare, and localized educational tools point to how AI could drive economic renewal and address persistent challenges. Both Dr. Hagberg and Ms. Gupta expressed an optimistic vision these tools will inspire a new wave of entrepreneurs who harness AI to solve problems in their own community. Similarly, Ms. Meg Fisher pointed to the breakthroughs underway in healthcare, where computing power is already being used to develop more personalized and impactful treatments—advances that could benefit patients regardless of geography.

This vision also calls into question the assumption that only those with massive computational infrastructure can meaningfully contribute to AI advancement. **Ms. Gupta pointed to the DeepSeek AI model as evidence that progress does not always require training models from scratch. Instead, fine-tuning existing models through post-training and reinforcement learning—particularly with input from domain specialists—can unlock major gains.** She illustrated this with a metaphor: a general-purpose athlete becomes truly effective only after a coach prepares them for a specific sport. This approach supports greater access and could help drive AI innovation in communities with limited resources.

New Mexico stands at the intersection of innovation and inclusion—home to some of the nation's most advanced research institutions, yet marked by persistent disparities in education, infrastructure, and opportunity. This paradox makes it an ideal proving ground for national AI policy. The path forward must balance speed with stewardship, innovation with equity, and ambition with accountability. If New Mexico can align its unique assets—U.S. DOE National Laboratories, research universities, diverse communities, and civic institutions—it can lead the way in shaping an AI future that serves all.

TECH TALK

Beyond Genetics—How Infections Alter Our 3D Genome

PANELISTS

Dr. Cullen Roth
Genomics and Bioanalytics Scientist, Los Alamos National Laboratory

Session Overview

Dr. Cullen Roth of Los Alamos National Laboratory delivered a powerful Tech Talk on groundbreaking research that redefines how scientists understand the human genome—not as a simple linear sequence, but as a dynamic, three-dimensional structure critical to cellular function. This work has wide-reaching implications, from enhancing diagnostics and therapies to advancing AI-driven biological models and improving agriculture.

Key Session Insights

Dr. Cullen Roth, Genomics and Bioanalytics Scientist at Los Alamos National Laboratory, presented a compelling overview of transformative research redefining how scientists understand the human genome and its relevance to medicine, technology, and agriculture. Reflecting on the field's evolution since the early days of his career, Dr. Roth described a dramatic departure from earlier models that viewed the genome as a simple linear sequence. Today, researchers understand it as a complex, three-dimensional structure, intricately looped and folded within the confines of the cell nucleus.

"We can measure the 3D space between chromosomes when cells become infected by common cold. Through that, we can figure out which chromosomes are lost and gained post infection."

Dr. Cullen Roth
Genomics and Bioanalytics Scientist
Los Alamos National Laboratory

This structural complexity is foundational to how cells function. Although the human genome would measure approximately six feet long if fully unspooled, it fits within a nucleus smaller than two microns. Dr. Roth highlighted how this extraordinary level of compaction is achieved through an organized three-dimensional configuration that researchers at Los Alamos have worked to map. New technologies now allow scientists to sequence how DNA folds and interacts with itself in three-dimensional space, producing models that reflect the genome's dynamic nature. "This genomic structure in three-dimensional space is what differentiates our different cells," Dr. Roth explained. He noted that gene transcription often depends on regulatory elements coming into contact with genes at precisely the right moment—even when they are located on entirely different chromosomes. Understanding these interactions is crucial to decoding how the human body operates and how diseases originate and progress.

A specific application of this research involves studying how cells respond to viral infections. Dr. Roth discussed how scientists can now track the spatial relationships between chromosomes in lung cells infected by viruses such as the common cold. By measuring these three-dimensional changes, researchers can determine which chromosomes are gained or lost after infection. This ability to monitor chromosome behavior in real time is opening new pathways for exploring how cells adapt to disease and environmental stress.

The implications of this work extend far beyond diagnostics. At Los Alamos, researchers see immense potential in applying three-dimensional genome models to advance vaccine development, design targeted therapies, and develop artificial intelligence systems capable of interpreting cellular changes. These models are also shedding light on aging, cancer, developmental disorders, and agricultural challenges such as crop protection.

Through this innovative research, Los Alamos National Laboratory is helping to pioneer a new frontier in genomic science. Advanced modeling of the genome's three-dimensional organization is positioned to drive major breakthroughs in medicine, biotechnology, and computational biology.

PANEL

The Intersection of Science and National Security

PANELISTS

Dr. Kevin Dixon
Program Director, Sandia National Laboratories

Ms. Rebecca Jackson
Chief Privacy Officer and Senior Counsel, Sandia National Laboratories

Mr. Nicholas Generous
Deputy Group Leader, Los Alamos National Laboratory

Moderator: The Hon. Will Tobey
Center Director, Center for National Security and International Studies, Los Alamos National Laboratory

Session Overview

As research and innovation accelerate progress and U.S. competitiveness in fields like AI, biotech, and cybersecurity, research security has never been more pressing. Today, researchers and institutions face a growing array of threats to their work, from intellectual property theft to nation-state espionage. In this session, our expert panel unpacked the latest risks and strategies for protecting research and innovation.

Key Session Insights

AI, as a dual-use technology, presents both significant opportunities and serious risks. It can enhance decision-making, streamline operations, and support strategic objectives, but it also introduces vulnerabilities, from technical flaws to gaps in governance and oversight.

A key concern raised by Mr. Nicholas Generous, Deputy Group Leader at Los Alamos National Laboratory, was AI's capacity to magnify systemic weaknesses. "AI can scale harm massively," he warned, especially in environments already exposed to risk. He likened this risk exposure to debates in biotechnology, such as gain-of-function research, where advances come with heightened security concerns. Insider threats, he added, are particularly troubling—those with privileged access to AI systems may exploit them in ways that are hard to detect and mitigate.

These challenges point to a critical shortcoming in current policy. Traditional regulatory models are no longer adequate for managing AI's rapid pace of change. **Rather than trying to keep up by regulating each new tool or application, Dr. Kevin Dixon, Program Director at Los Alamos National Laboratory, made the case that rules should be based on the outcomes of AI processes.** He described this concept as an "outcomes-based risk framework." Instead of constantly rewriting regulations for every emerging innovation, this model focuses on assessing the broader impacts of AI deployment. Such a shift would allow policymakers to address risk at the systems level, supporting more adaptable and durable oversight.

"As AI technology continues to accelerate, the divergence between good outcomes and bad outcomes has never been wider."

The Hon. Will Tobey
Center Director, Center for National Security and International Studies
Los Alamos National Laboratory

Dr. Dixon argued the process of securing AI is like the processes of securing human researchers. "In my perspective, there is no difference between artificial intelligence and 'real intelligence,'" he noted. Rather than treating AI as a separate category requiring its own ethical or regulatory framework, Dr. Dixon maintained that institutions should apply consistent accountability standards—whether a decision is made by a person or a machine. If an AI system causes harm, the

"The AI landscape, and the legal landscape around it, is rapidly evolving."

Ms. Rebecca Jackson
Chief Privacy Officer and Senior Counsel, Sandia National Laboratories

"The real balance for AI rule makers is trying to balance security and innovation."

Mr. Nicholas Generous
Deputy Group Leader, Los Alamos National Laboratory

deploying organization should be held responsible, just as it would be for failures resulting from human judgment.

Ms. Rebecca Jackson, Chief Privacy Officer and Senior Counsel at Sandia National Laboratories, extended this discussion by turning to the human side of research security. She defined it as "a set of practices that preserves information and data in research applications and contexts," and noted that many breaches are not the result of foreign actors or sophisticated attacks, but of avoidable internal mistakes. "There might be cybersecurity threats that we may be facing, but most of the breaches Sandia faces is due to human error," she said.

These internal vulnerabilities, Ms. Jackson warned, have consequences far beyond the immediate loss of information. Breaches that begin with simple human error can escalate into system-wide disruptions, especially when critical infrastructure is affected. "We need to think about the potential disruption of work from ransomware attacks. These threaten our supply chain," she cautioned. In this way, cybersecurity is not only a digital issue, but also a logistical and organizational one. Protecting scientific institutions requires embedding security across both technical and operational domains.

To address these evolving risks, Ms. Jackson advocated for a shift toward governance that is flexible and grounded in risk-based thinking. Rather than relying on static rules, Ms. Jackson pointed to frameworks like those developed by the National Institute of Standards and Technology (NIST) as tools for more adaptive decision-making. The NIST frameworks, including the widely adopted Cybersecurity Framework (CSF) and the Risk Management Framework (RMF), offer structured, modular approaches to identifying, assessing, and mitigating security risks. These frameworks

are built around core principles such as continuous assessment, institutional accountability, and outcome-based decision-making—all of which are crucial in managing emerging technologies like AI.

Building on this institutional foundation, Ms. Jackson further argued that navigating the complexity of systems like artificial intelligence requires expanded training in research security. Institutional leaders must be able to understand how AI models function, ask critical questions, and anticipate downstream consequences. Mr. Generous reinforced this view, stressing the need to formalize best practices in AI use to ensure consistency and accountability in a fast-changing landscape. He also asserted that the government has a central role in safeguarding national security, particularly where AI technologies developed in the private sector may have dual-use applications with the potential to be misused or weaponized.

In parallel, data security becomes integral to AI risk governance, as both internal and external threats require the same adaptive frameworks and careful management. Data is a critical asset in AI systems, as its quality and protection are vital for the safe and responsible deployment of AI technologies. Dr. Dixon noted that any data of value to the United States quickly becomes a target for adversaries. Describing data as "intellectual capital," he positioned it as a core asset to protect. The risk of data exposure, whether through internal breaches or cyberattacks from foreign adversaries, underscores the need for robust data governance within AI risk management. Dr. Dixon advocated for smart data-sharing structures that safeguard sensitive information while enabling collaboration, urging institutions to carefully manage how they govern access to research outputs.

"The advantage the United States has is our likeminded friends. We cannot harness the full power of data and data tools all by ourselves."

Dr. Kevin Dixon
Program Director, Sandia National Laboratories

However, robust data protection cannot come at the cost of scientific isolation. Collaboration across borders is itself a competitive advantage—one that, if managed carefully, can coexist with strong information controls. Dr. Dixon framed collaboration with democratic allies as a critical asset, especially when facing global competitors with centralized, authoritarian research systems. He pointed to the United States' partnerships with other free nations as an underused strength—one that not only expands access to research talent and infrastructure but also reinforces shared values around transparency and accountability. However, Dr. Dixon also cautioned that collaboration must be purposeful and secure. "We need to be intentional with the information we choose to disseminate and the information we share," he added, calling for tighter alignment between researchers and institutional

bodies such as technology transfer offices and innovation hubs. These internal mechanisms, he argued, can help steward knowledge exchange in ways that balance openness with strategic restraint.

The need for careful deliberation in international cooperation is complicated when considering how emerging technologies evolve globally. Mr. Generous suggested, in certain cases, engagement with adversarial nations is not only inevitable but could be strategically necessary. He pointed to fields like artificial intelligence, quantum computing, and synthetic biology, where technological advancements in one region can rapidly have global consequences. The nature of these technologies means that developments in one country—whether a friend or adversary—can quickly influence global norms, security, and the overall pace of innovation. As such, Mr. Generous argued that engaging with strategic competitors in these areas can offer valuable insights into their technological advancements, potentially helping to prevent the misuse of these technologies on a global scale.

Regardless of whether the United States works with ally or rival, its international scientific partnerships must be governed by thoughtful guidelines. Ms. Jackson argued that collaboration cannot be improvised—it must be governed by clearly defined agreements that articulate mutual expectations around data handling, security, and research ethics. Without shared protocols, she warned, even well-intentioned projects can falter due to misalignment between partners operating under different legal and cultural systems. These guidelines for information sharing become even more important in the complex scenario where the United States may need to extend its partnerships beyond its traditional allies.

As the panel wrapped up, there was agreement that artificial intelligence has the potential to radically reshape the social and economic order by lowering the barriers to innovation and enabling new players to challenge established industries. This heightened pace of disruption, while promising, also introduces new vulnerabilities within research institutions and the national security enterprise—vulnerabilities that require proactive and adaptive governance. Dr. Dixon warned that future breakthroughs may emerge in forms that elude traditional detection and oversight systems, making preparedness even more critical. Although the benefits of AI—from advanced models to collaborative research tools—are vast, their development and deployment must be approached with clear intent and strategic foresight.

FIRESIDE CHAT

The Quantum Connection in New Mexico

PANELISTS

Dr. Avinash (Nash) Palaniswamy
Chief Commercial Officer, Quantinuum

Moderator: The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

Dr. Deborah Frincke
Associate Laboratories Director, National Security Programs, Sandia National Laboratories

Dr. Thom Mason
Laboratory Director, Los Alamos National Laboratory

Session Overview

Held during an unexpected power outage, this chat explored how a rapidly growing firm can optimize its collaboration with two leading U.S. Department of Energy National Laboratories. Leaders from each organization discussed partnership strategies, current trends, and opportunities to drive innovation and economic growth in New Mexico and the region.

Key Session Insights

To open the fireside chat—*a particularly appropriate name giving the power outage*—Council on Competitiveness President and CEO Deborah L. Wince-Smith discussed how the nation is entering a new era of innovation and collaboration, particularly in quantum computing, a domain where New Mexico is growing as a national—and global—leader.

Dr. Nash Palaniswamy, Chief Commercial Officer of Quantinuum, highlighted New Mexico as one of the most promising sites for quantum growth, citing its elite U.S. Department of Energy National Laboratories and a strong talent pool from local universities as key factors in establishing the state as a hub for quantum technology innovation. Quantinuum, a leading commercial quantum computing company, partners closely with Los Alamos National Laboratory and Sandia National Laboratories, two of the United States' premier quantum research institutions. Together, these institutions are addressing major technical barriers to quantum computing—including improving algorithm efficiency, boosting qubit fidelity, and lowering error rates that limit broader application.

However, the future success of the quantum industry hinges not only on advances in quantum hardware but equally on the development of practical, real-world applications that can leverage this emerging technology.

"The Council has a long standing role in the importance of America's leadership in high performance computing. To out-compete is to out-compute."

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

Fields such as materials design and AI stand to benefit significantly from quantum computing's unique capabilities. For example, quantum algorithms have the potential to simulate complex molecular interactions far more accurately than classical computers, accelerating breakthroughs in new materials and pharmaceuticals. Dr. Palaniswamy highlighted the convergence of quantum computing and artificial intelligence as particularly transformative. This intersection could revolutionize industries by enabling the creation of smarter, more efficient large language models and other AI systems that process and analyze data at unprecedented speed and scale. Such advancements would unlock new levels of performance in machine learning, natural language processing, and decision-making.

"What makes New Mexico great, from the perspective of a quantum company, is the research from Los Alamos and Sandia National Laboratories and the talent coming from the state's universities."

Dr. Avinash (Nash) Palaniswamy
Chief Commercial Officer, Quantinuum

"The best partnerships thrive on sharing both ideas and innovations. Ideas spark innovation, innovation drives transformation, and that brings forth even more new ideas. Laboratories utilize what industry develops, while industry drives forward what laboratories demonstrate. This collaborative process benefits everyone involved."

Dr. Deborah Frincke
Associate Laboratories Director, National Security Programs
Sandia National Laboratories

To move these applications forward, New Mexico must foster an environment that supports both the development and deployment of quantum computing. As Dr. Thom Mason, Laboratory Director of Los Alamos National Laboratory, explained, national security remains a key driver of quantum research at the DOE National Laboratories, but that alone will not be sufficient to scale the technology. Private-sector engagement is essential, especially from industries like finance, advanced manufacturing, and materials science, where quantum solutions could offer significant competitive advantages. However, achieving market traction requires infrastructure, coordination, and investment beyond what the laboratories alone can provide.

Bridging this gap between research and commercial viability depends on a broader ecosystem that actively connects laboratory innovation with industry application. Public-private partnerships play a central role in making that connection. As Dr. Deborah Frincke, Associate Laboratories Director for National Security Programs at Sandia, explained, these partnerships enable a continuous exchange of people, ideas, and applications. Quantum development often follows a cyclical process: research begins in the laboratories, moves to the private sector for application, and returns to the labs for further refinement. Sustaining this cycle depends on resilient partnerships that adapt to evolving federal priorities and funding environments.

In a world of shifting federal priorities, Dr. Mason discussed the importance of active state leadership in developing New Mexico's quantum ecosystem. While the U.S. DOE National Laboratories are bound by mandates that require impartiality in funding decisions, states are not similarly restricted—they are free to pursue strategic investments that support regional economic development. New Mexico's state leadership has the opportunity to capitalize on the region's resources to ensure its quantum innovation ecosystem flourishes.

"While we cannot and should not direct our funding in a way that favors one jurisdiction, the reality is that geography and relationships matter. It can be easier to do things face to face."

Dr. Thom Mason
Laboratory Director, Los Alamos National Laboratory

Bringing the fascinating discussion to a close, Ms. Wince-Smith pointed out how, despite its research strength, New Mexico lags other states in startup formation and technology commercialization. However, the state has the opportunity to invest in the conditions that enable companies to grow—including capital access, entrepreneurial support, and workforce development—and thereby bridge the discovery-to-deployment gap and further strengthen its position as a leading quantum hub.

PANEL

The New Space Race: Harnessing the Opportunities of Agile Space

PANELISTS

Dr. Brad Clevenger
Vice President, Space Systems, Rocket Lab

Ms. Casey DeRaad
CEO, New Space Nexus

Mr. Gabe Mounce
Director, Technology Engagement Office, Air Force Research Laboratory

Col. Jeremy A. Raley
Commander, Phillips Research Site; Director, Space Vehicles Directorate, Air Force Research Laboratory, Kirtland Air Force Base

Mr. Randy Trask
Executive Director, Q Station

Moderator: Ms. Jerriann Garcia
Program Director, Sandia National Laboratories

Session Overview

The space industry is embarking on a new era of competition and innovation, marked by the emergence of pioneering companies like SpaceX and Virgin Galactic. These new entrants have shaken up the traditional space industry, launching new sectors like space tourism and igniting a global space race among companies and nations. Leaders on this panel reflected on a decade of progress within the space industry and the opportunities it presents for life on Earth.

Key Session Insights

Ms. Jerriann Garcia, Program Director at Sandia National Laboratories, opened the panel by helping define the concept of the modern space race, a multifaceted contest involving a wide array of stakeholders—industry, academia, the military, and international partnerships. This broadened engagement has transformed the space race into a more dynamic, collaborative, competitive, and forward-looking endeavor, where traditional distinctions and players are being upended by new models and entrants.

Over the past decade, the advent of low-cost, reusable launch technologies has dramatically reduced barriers to entry, making it feasible to send highly capable, lightweight payloads into orbit at a fraction of the cost once required. Dr. Brad Clevenger, Vice President of Space Systems for Rocket Lab, noted that this development has opened space access to a far wider range of actors. With more players involved, the potential for new, creative solutions to the challenges of space exploration is greater than ever before. This democratization of space presents an exciting opportunity to build on the cooperative frameworks that Ms. Garcia discussed, as more stakeholders contribute to the development of a shared, sustainable space future.

"The new space race is not just a race between two nations. It is a race that involves industry, academia, military, and partnerships globally."

Ms. Jerriann Garcia
Program Director, Sandia National Laboratories

As the cost of entry continues to fall, this shift is also having profound effects on strategic priorities, particularly within defense. The military, once limited by the high costs of space technology, is now leveraging this accessibility to reshape its approach, especially in the realm of military satellites. Col. Jeremy A. Raley, Director of the Space Vehicles Directorate at the Air Force Research Laboratory, highlighted a major operational pivot toward mass deployment in space. The prevailing logic is that volume confers strategic advantage—"In the military, mass is the principle by which we operate. Whoever has the most stuff usually prevails." However, as Col. Raley discussed, while quantity is critical, the effectiveness of these systems increasingly relies on balancing scale with technological sophistication.

"Satellites become a means to an end for big data applications. The satellite economy will create many jobs and opportunities for data scientists."

Dr. Brad Clevenger
Vice President, Space Systems
Rocket Lab

"The exciting thing about the new space economy is we are not limited to traditional space activity."

Mr. Randy Trask
Executive Director, Q Station

As the military adapts to the new realities of space access, the same technological advancements and lowered costs are enabling the commercial sector to explore new possibilities. While defense focuses on strategic advantage, the commercial sector is rapidly evolving into a key player in space innovation, driving new applications and industries.

In 2010, the space market was predominantly government-led, but today, commercial enterprises have surpassed government spending, contributing to exponential growth. As financial barriers continue to lower and participation expands, the space sector is rapidly transitioning to a commercially powered, innovation-rich ecosystem, further accelerating the pace of development.

This commercialization of space, with new players entering the field and expanding space access, is not only transforming the space industry but also bringing tangible benefits to Earth-based industries. Q Station Executive Director Randy Trask illustrated how small companies, now able to reach orbit more affordably, are pursuing unconventional activities that were previously out of reach. By providing on-orbit services and platforms, Q Station aims to enable a wide range of commercial enterprises to operate in space, from advanced research to manufacturing processes that take advantage of space's unique environment. For example, microgravity offers distinct benefits for producing certain materials and pharmaceuticals, potentially leading to breakthroughs that could not occur on Earth. Mr. Trask explained that Q Station's

"If we are going to compete and win in space, we need to compete as a team."

Col. Jeremy A. Raley
Commander, Phillips Research Site

Director, Space Vehicles Directorate
Air Force Research Laboratory
Kirtland Air Force Base

"The commercial sector is driving innovation in the space economy, leading to significantly more innovation."

Mr. Gabe Mounce
Director, Technology Engagement Office
Air Force Research Laboratory

focus is not only on enabling these new industries but also on creating a sustainable, operational infrastructure in space, which allows businesses to scale their activities beyond Earth's surface.

Mr. Trask pointed out that many space-related startups are developing technologies applicable to both space and terrestrial markets. Often, these companies begin by creating solutions for Earth-based needs, and then companies like Q-Station can connect them to demands in the space market. He provided examples such as space-based remote sensing for infrastructure monitoring, agricultural analytics, and climate change diagnostics. These space-based assets are not only providing new tools for industries on Earth but are also creating entirely new value chains that extend the reach of space technology into everyday business.

Despite these innovations benefiting industries and consumers alike, a significant gap still exists between the pace of technological development and public understanding of space's broader impact. Although the space economy is rapidly expanding, many still view it through a narrow lens, focusing primarily on civil exploration and government-driven initiatives. **To bridge this gap, Mr. Trask called for a reframing of space as a multidimensional operational domain, akin to air, sea, and land, with vast commercial and strategic potential.** He envisions a future where space infrastructure supports a variety of industries—from telecommunications and energy to manufacturing and logistics—each contributing to a broader, interconnected off-Earth economy. This shift in per-

spective, he argued, is essential for unlocking the full economic and strategic potential of space.

The evolution Mr. Trask describes is already underway, as evidenced by the growing involvement of non-traditional actors in space. **New Space Nexus CEO Casey DeRaad highlighted how universities and commercial providers like Starlink are deploying large constellations of small satellites to low Earth orbit. These constellations are advancing research and delivering tangible services, such as streaming platforms like Netflix and expanded mobile communications, directly impacting the lives of consumers.** According to Ms. DeRaad, these services represent a pivotal moment in which space infrastructure has moved from being an abstract concept to becoming an integral part of modern digital life.

Despite this progress, Ms. DeRaad stressed the continued importance of government support in helping these companies get off the ground. She highlighted the role of the Space Force in offering early-stage funding and the necessity of public-private partnerships. Venture capitalists, according to Ms. DeRaad, typically want to see early government contracts to mitigate investment risk. This catalytic government involvement remains crucial for the development of a successful and sustainable space economy ecosystem.

With space technology advancing rapidly and the sector evolving into a commercial powerhouse, New Mexico's strategic infrastructure, research assets, and commercial partnerships are setting the stage for its growing prominence in the space economy. Mr. Gabe Mounce, Director of the Technology Engagement Office at Air Force Research Laboratory, noted that partnerships with entities like the U.S. Space Force have placed New Mexico at the center of the new space economy.

"We are not a poor state. New Mexico has one of the biggest sovereign wealth funds."

Ms. Casey DeRaad
CEO, New Space Nexus

Collaborations are essential, but to sustain and expand this momentum, there is a pressing need to improve understanding of both the technological capabilities and financial structures required to support space ventures. In this context, initiatives such as incubators, programs that align commercial missions with government objectives, and the Hyperspace Challenge—a program launched by the Air Force Research Laboratory that connects government innovators with startups and universities to develop space-related technologies—are key to fostering the ecosystem that will help New Mexico stay competitive and innovative in the growing space sector.

Building on the state's progress, Ms. DeRaad also noted that New Mexico has one of the largest sovereign wealth funds in the nation, signaling that the state has the financial capability to support its growing space industry. Companies are also beginning to view New Mexico not only as a place to do business but as a place to stay, attracted by

its robust space infrastructure. This shift marks a significant change as the state grows into its role as a key player in the space sector.

As New Mexico's space economy continues to expand, it faces challenges, however, particularly in talent acquisition. Col. Raley highlighted that the state's ability to attract and retain skilled workers is essential for sustained growth. He proposed the creation of an "education corridor" to draw students from neighboring states, underscoring that regional recruitment is critical for building a sustainable workforce.

Equally important to New Mexico's growth in the space economy are its research institutions, particularly the U.S. DOE National Laboratories, including the Los Alamos National Laboratory (LANL) and Sandia National Laboratories. These labs play a pivotal role in advancing space research, yet their contributions often go underrecognized. Mr. Trask pointed out that space could be one of the largest portfolios at LANL. He argued New Mexico must embrace and celebrate these capabilities more visibly, suggesting that the state take inspiration from Houston, which has firmly established itself as a space hub.

By fully leveraging the expertise and resources of the U.S. DOE National Laboratories alongside its growing commercial sector, New Mexico is well-positioned to become a recognized leader in the space economy, provided it capitalizes on this unique strategic advantage.

TECH TALK

Driving Innovation in New Mexico—Public-Private Partnerships for Economic Growth

Mr. David Kistin
Manager, Business Development, Sandia National Laboratories

Session Overview

Mr. David Kistin highlighted how Sandia National Laboratories leverages public-private partnerships, technology transfer, and regional collaboration to drive economic development across New Mexico. Through initiatives like technical assistance programs, the Sandia Science and Technology Park, and the DOE Boost Platform, Sandia National Laboratories translates federal investment into local innovation and inclusive economic growth.

Key Session Insights

In his Tech Talk, Mr. David Kistin, Manager of Business Development at Sandia National Laboratories, outlined how Sandia is advancing economic development in New Mexico through a multifaceted strategy rooted in public-private partnerships, technology transfer, and regional engagement. Dr. Kistin explained that Sandia National Laboratories' collaborations are central to fulfilling its federal responsibilities while supporting local innovation. "Partnerships help Sandia National Laboratories meet its mission needs. What we work on is translating billions of dollars of federal investment into local economic impact," he said. This philosophy is rooted in the idea of "positive-sum economic development," where the benefits of collaboration extend to all parties involved—from scientific institutions to private companies and communities. Through its public-private-partnerships, Sandia National Laboratories is a conduit that channels significant federal investment into the local economy, enabling widespread benefits.

A critical mechanism for achieving this is Sandia's extensive technical assistance programming, which has supported thousands of small and mid-sized enterprises across the state. These programs offer businesses access to Sandia's scientific expertise and specialized

tools, helping them overcome technical hurdles, accelerate innovation, and scale their operations more efficiently.

This commitment to regional growth is also reflected in the success of the Sandia Science and Technology Park. The park hosts 41 companies and serves as a hub where cutting-edge research intersects with entrepreneurial activity. Sandia actively tracks the economic outcomes of businesses located in the park, which together have generated more than $7.7 billion in wages distributed across New Mexico's counties.

To further bolster the innovation pipeline, Sandia collaborates closely with the New Mexico Economic Development Department. This collaboration enables the use of state-level incentives and public-private partnership frameworks to help new ventures thrive. These efforts ensure that companies not only have access to Sandia National Laboratories' resources but also operate within an ecosystem that fosters sustained growth.

Dr. Kistin also spotlighted the Department of Energy's Boost Platform as a key initiative in identifying and cultivating regional opportunities for technology transfer. Designed to accelerate commercialization and regional innovation, the Boost Platform connects U.S. DOE National Laboratories with local stakeholders—including startups, small businesses, and economic development organizations—to align lab capabilities with real-world market needs. At Sandia, the platform helps lower barriers for businesses by streamlining access to scientific expertise, facilities, and intellectual property. In doing so, it supports a more inclusive and agile ecosystem where advanced research tools are made readily available to innovators across New Mexico.

> "We want to make sure New Mexico is a place where companies can access the U.S. DOE National Laboratories easily so they can scale and grow."
>
> **Mr. David Kistin**
> Manager, Business Development
> Sandia National Laboratories

U.S. DOE National Laboratories like Sandia not only serve as research institutions but also as vital engines of regional innovation. By building robust partnerships, supporting local businesses, and advancing accessible technology platforms, Sandia is helping to convert national investment into shared economic prosperity for New Mexico.

TECH TALK

How Academia, the National Laboratories, and Private Industry Spur Innovation in the Wild West of Quantum Computing

Dr. Dan Stick
Senior Scientist, Sandia National Laboratories

Session Overview

Dr. Dan Stick presented a comprehensive overview of the current state and future trajectory of quantum computing. In his Tech Talk, he outlined the critical roles played by universities, U.S. Department of Energy National Laboratories, and industry in developing the emerging field of quantum computing.

Key Session Insights

Dr. Dan Stick, Senior Scientist at Sandia National Laboratories, offered an in-depth perspective on the evolving landscape of quantum computing. He began by framing quantum computing as the "wild west"—a domain of science marked by unpredictable discoveries and multiple potential paths to success. Breakthroughs in the field often generate significant excitement but also demand careful scrutiny. While quantum systems are frequently touted as capable of solving virtually any problem by evaluating all possible solutions simultaneously, Dr. Stick cautioned that this portrayal can be misleading. The real challenge lies in designing algorithms that can effectively isolate and enhance the correct answer.

Recognizing the complexity of these challenges, Dr. Stick then outlined the institutional collaboration needed to advance the field. Universities, he explained, lead in conducting fundamental physics research, training students, and exploring diverse scientific directions in quantum. They are also critical drivers of innovation, frequently spinning off new companies. The U.S. DOE National Laboratories contribute by focusing on applied research tied to national missions, developing algorithms for government-specific challenges, and offering access to advanced

facilities. Industry complements these efforts with targeted development efforts and commercialization strategies, driven by customer demand and investor expectations. "The successful development of a quantum computer will happen if people are pushing it from all directions," Dr. Stick asserted, calling attention to the synergistic power of cross-sector partnerships.

To illustrate how collaboration is already reshaping what is possible, Dr. Stick pointed to a case study involving FeMoCo, a molecule essential to nitrogen fixation and fertilizer production. In 2016, simulating this molecule using quantum methods was estimated to require over 100 million physical qubits and four days of computation. By 2021, a collaboration among universities, U.S. DOE National Laboratories, and private firms had reduced that requirement to just 4 million qubits, maintaining the same runtime—**a leap that redefined the technical frontier and pulled forward the timeframe in which a system capable of performing this algorithm would be available.** Other examples of collaborations accelerating quantum research are the DOE testbeds that provide low-level access to quantum hardware, enabling researchers to experiment with algorithms and conduct hands-on testing. These platforms—along with benchmarking tools and quantum tomography—help cultivate a competitive and creative research environment.

"Academic, national lab, and commercial researchers are working simultaneously to reduce the algorithmic resources required for useful quantum computation and to build more powerful quantum hardware to run those algorithms. When those two efforts meet, we will have a revolutionary computational tool."

Dr. Dan Stick
Senior Scientist, Sandia National Laboratories

As Dr. Stick looked to the broader horizon, he made the case for sustained federal involvement to support breakthroughs that lie beyond the typical planning cycles of private industry. To illustrate the challenge and need for breakthroughs, he drew a comparison between current server chips, which contain 48 billion transistors and 5,000 I/O pins, and the projected demands of trapped ion quantum computers, which could require one million

ions controlled by four million precision laser beams. Reaching that scale will require government-backed research to mitigate risks and pave the way for future commercialization.

Public investments are advancing the quantum field at both national and state levels. Federally, key efforts include the DOE's National Quantum Information Science Centers, the NSF's National Quantum Virtual Lab, and DARPA's Quantum Benchmarking Initiative — which is evaluating the prospect that a utility-scale quantum computer will be operating by 2033. In New Mexico, the state is committing $30 million in 2026 to infrastructure, entrepreneurial ecosystems, and commercialization support. The University of New Mexico will also receive $1.8 million to expand its quantum institute, including $500,000 for first-year fellowships to support student and faculty research.

Through a careful balance of theoretical inquiry, applied experimentation, and multi-sector collaboration, New Mexico is establishing itself as a hub for quantum innovation. The trajectory of the field will not be defined by any single institution, but rather by the collective effort of universities, the U.S. DOE National Laboratories, and private industry working in unison to push the boundaries of what is possible.

PANEL

Manufacturing Innovation: Embracing Change in the Era of Automation

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Mr. Jeffrey Connor
Director, New Mexico Operations, Kansas City National Security Campus

Dr. Lonnie Love
Fellow, Sandia National Laboratories

Dr. Rajinder Singh
Group Leader, Materials Synthesis and Integrated Devices, Los Alamos National Laboratory

Ms. Jennifer Sinsabaugh
CEO, New Mexico MEP

Moderator: Dr. Mohan Karulkar
Manager, Sandia National Laboratories

Session Overview

Advanced manufacturing exists at the intersection of robotics, automation, 3D printing, data processing, and predictive simulation. It is poised to revolutionize how we design and deliver products, creating abundant opportunities for those ready to embrace the challenges of adopting advanced manufacturing technologies. Leaders and practitioners making up this panel discussed how advanced manufacturing is unfurling in New Mexico and the United States.

Key Session Insights

The manufacturing sector is undergoing a significant transformation driven by automation, artificial intelligence, and advanced production technologies. Ms. Jennifer Sinsabaugh, CEO of New Mexico MEP, described how one tile manufacturing facility experienced a 600 percent increase in capacity through robotic automation. Despite these technological advances, as pointed out by Mr. Jeffrey Connor, Director of New Mexico Operations for the Kansas City National Security Campus, many core manufacturing processes remain firmly rooted in outdated methodologies—mechanical systems, legacy equipment, and manual workflows that have changed little in decades. This disconnect between innovation and actual production practices creates a bottleneck, preventing emerging manufacturing technologies like AI, advanced sensors, and robotics from being deployed at scale.

Adopting advanced manufacturing processes is not merely about improving business productivity—it is a national security imperative. Sandia National Laboratories Fellow Lonnie Love warned that the deterioration of domestic manufacturing capacity has created dangerous dependencies, especially in defense. The collapse of the United States' aluminum forging industry, for example, has left the country reliant on China and Russia for a material that underpins critical defense systems. Global supply chain fragility adds another layer of urgency. Dr. Love singled out the semiconductor industry as a critical vulnerability, given its dependence on Taiwanese manufacturing. Given how crucial semiconductors are for our commercial and defense technologies, this supply chain vulnerability poses a significant threat to U.S. competitiveness. As the geopolitical environment becomes increasingly volatile, the ability to modernize and scale advanced manufacturing capabilities will directly impact the nation's ability to respond to strategic threats and remain economically and technologically competitive.

"New Mexico is the land of deterrence. 80 years ago, this area ended a great war. And because of the great work in this region, we have prevented another great war."

Dr. Lonnie Love
Fellow, Sandia National Laboratories

"A discussion introducing to new technologies and resources like the U.S. DOE National Laboratories can open a manufacturer's eyes to the future."

Ms. Jennifer Sinsabaugh
CEO, New Mexico MEP

"We have to drive out the fear from changes in manufacturing methods."

Dr. Mohan Karulkar
Manager, Sandia National Laboratories

Adapting to this new manufacturing landscape requires confronting deep-seated resistance to change. This hesitation often leads companies to delay investments until it is too late to remain competitive—or worse, to invest in technologies that are already on the verge of becoming outdated. This risk aversion can stall innovation and create strategic vulnerabilities. In this rapidly evolving environment, Ms. Sinsabaugh argued that the traditional business model, which favors stability, long-term capital investments, and a reliance on slow, incremental improvements, no longer aligns with the fast pace of technological change. **Dr. Rajinder Singh, Group Leader of Materials Synthesis and Integrated Devices at Los Alamos National Laboratory, explained that manufacturers must remain agile—able to quickly integrate artificial intelligence, robotics, and novel materials—to stay competitive.** This means adopting flexible strategies that allow for continuous learning, faster adaptation to new tools, and the ability to pivot quickly as technologies evolve. **Furthermore, researchers should introduce U.S. manufacturers to their innovations through demonstrations, thereby making them more comfortable with the new technology.** Ms. Sinsabaugh proposed that New Mexico serve as a national model for technology demonstration, leveraging the capabilities of the U.S. DOE National Laboratories to provide local manufacturers with access to cutting-edge tools and expertise.

Aligning research efforts with industry needs is crucial for advancing New Mexico's manufacturing capabilities. Mr. Connor discussed how the state's ability to commercialize new technologies is often impeded by disconnects between research institutions, industry, and venture capital.

"Manufacturers have to be agile, they have to think about how to take something emerging like AI and to quickly deploy it to bring new material to the market."

Dr. Rajinder Singh
Group Leader, Materials Synthesis and Integrated Devices
Los Alamos National Laboratory

"The New Mexico innovation ecosystem is a three-legged stool supported by research, entrepreneurship, and venture capital. The strong leg we have is our strong research community. For our ecosystem to be competitive, we need all three legs to be strong."

Mr. Jeffrey Connor
Director, New Mexico Operations
Kansas City National Security Campus

While New Mexico boasts strong research capabilities through the U.S. DOE National Laboratories, these innovations often fail to make the leap from the lab to the marketplace due to insufficient collaboration with business and financial sectors. Bridging these gaps will be essential for driving advanced manufacturing forward. Strengthening ties between research, industry, and venture capital will ensure that emerging technologies, such as AI and robotics, are integrated into manufacturing processes and scaled for broader economic impact. Without these critical connections, New Mexico risks missing out on the opportunity to transform its innovative research into tangible, high-impact advancements in manufacturing.

Achieving this alignment, however, will require more than improved partnerships—it will demand systemic change across institutional boundaries that currently isolate innovation efforts. Ms. Sinsabaugh argued that siloed efforts—whether across industries, research domains, or government agencies—prevent the kind of integration required to unlock transformative, cross-cutting solutions. The future of advanced manufacturing will not be driven by any one technology, but by the convergence of multiple

disciplines: AI, advanced materials, additive manufacturing, and smart sensors must work in concert to enable new production models. Achieving this level of integration requires deliberate coordination, shared goals, and a culture of experimentation that spans institutional boundaries.

With its strong research infrastructure—including that which is being led by Sandia and Los Alamos National Laboratories—and a growing base of small and mid-sized manufacturers, New Mexico is well-positioned to become a leader in advanced manufacturing. By fostering more intentional collaboration between these actors and supporting platforms for shared learning and co-development, New Mexico can more rapidly deploy emerging technologies, strengthen its industrial base, and expand its role in national innovation and security.

PANEL

Mapping the Enabling Conditions for New Mexico's Competitiveness Strategy for the Next 25 Years

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Moderator: Mr. Chad Evans
Executive Vice President and Chief Operating Officer, Council on Competitiveness

Session Overview

Building on insights shared throughout the New Mexico Competitiveness Conversation, this leadership panel examined the enabling conditions essential for the region's competitiveness strategy over the next 25 years, including the intersection of policy, infrastructure, innovation, technology, and workforce development.

Key Discussion Points

Mr. Chad Evans, Executive Vice President and Chief Operating Officer of the Council on Competitiveness, opened the conversation by highlighting the importance of place-based strategies to secure the United States' long-term competitiveness. U.S. competitiveness is growing in importance as the nation confronts China, a competitor uniquely presenting both economic and security challenges. Meeting this challenge requires not only technological and industrial leadership but also strategies grounded in regional strengths. New Mexico's distinctive assets, partnerships, and institutional capacity position it as a key contributor to this new era of great power competition.

At the core of New Mexico's advantage is a collaborative culture characterized by exceptional access and authentic partnerships. The state's close-knit networks and civic culture allow institutions to form meaningful partnerships and respond quickly to shared challenges. Ms. Tracy Hartzler, President of Central New Mexico Community College, highlighted that authentic relationships enable rapid progress from ideas to implementation. Similarly, Ms. Kathy Keith, Director of the Community Partnerships Office at Los Alamos National Laboratory, shared how accessible leaders across the state are. Even top decision-makers—including cabinet secretaries, legislators, and tribal leaders—are within reach, fostering a high degree of connectivity between stakeholders.

"We are in a new age of competition. Japan was an economic competitor, not a security competitor. The Soviet Union was a security competitor, not an economic one. China is the first time the United States has faced both."

Mr. Chad Evans
Executive Vice President and Chief Operating Officer, Council on Competitiveness

This access-driven ecosystem supports a thriving culture of innovation. Rather than siloed expertise, the state's institutions—including the U.S. Department of Energy National Laboratories—draw from multiple disciplines, fostering the cross-pollination of ideas that drives breakthrough innovation. At Los Alamos National Laboratory, for example, scientists from a wide range of disciplines work together, creating an environment where new ideas are constantly exchanged and refined.

This innovative and collaborative environment lays the groundwork for New Mexico to lead in several strategic "moonshot" opportunities

"New Mexico is unique because leaders from all sectors make themselves available to each other because we all know that we're in this together to help improve quality of life in New Mexico. This allows us to act quickly on good ideas that can make a difference."

Ms. Tracy Hartzler
President, Central New Mexico Community College

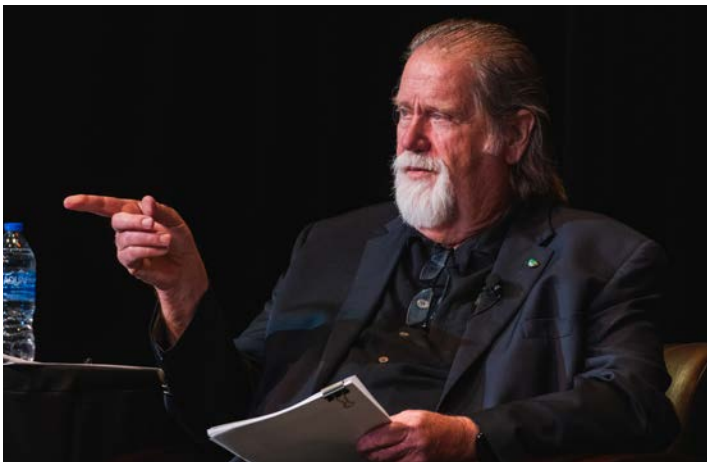
where the state already possesses significant scientific and technological advantages. In nuclear energy, New Mexico benefits from a deep well of expertise concentrated within the U.S. DOE National Laboratories, positioning the state as a leader capable of driving innovation and industry growth in this critical sector. Biosciences also offer significant promise, with projects such as developing vaccines to treat opioid withdrawal symptoms. As suggested by Dr. James Holloway, Provost and Executive Vice President of Academic Affairs at the University of New Mexico, the biggest moonshot opportunity in the state is quantum science. Foundational research in quantum information theory originated in New Mexico's laboratories, and the field has since grown into a national security priority with the potential to revolutionize computing, communications, and defense systems.

Despite its strong research foundation, New Mexico must enhance its ability to commercialize innovations to fully realize their impact. Ms. Mary Monson, Senior Manager of Technology Partnerships and Business Development at Sandia National Laboratories, stressed that "the other part of the moonshot is the business side"—the essential challenge of bringing groundbreaking technologies to market. New Mexico must develop more robust mechanisms to translate scientific breakthroughs into deployable, market-ready innovations. This includes building stronger connections between research institutions and the private sector, while also raising national awareness of the achievements already underway in New Mexico. "No one knows about the achievements of New Mexico," she remarked, urging a more proactive strategy to promote the state's capabilities and assets.

Building on this foundation requires a broader approach to economic development—one that connects innovation with long-term investment and sustained impact. **Ms. Monson highlighted the importance of not only developing technologies but also attracting companies, capital, and talent to the state.** This requires clearly communicating what New Mexico and its national laboratories offer—world-class science, a collaborative culture, and untapped potential. Dr. Holloway added that capturing companies is only part of the equation; New Mexico must also retain the value generated from scaling these innovations locally. Effective commercialization, therefore, is not just about moving research into the market-

"In New Mexico, we can get things done. It really goes back to that beauty of relationships. We are the place where you can pick up a telephone and ask someone if you need something."

Ms. Kathy Keith
Director, Community Partnerships Office
Los Alamos National Laboratory



"We live in transformational times. New Mexico is perfectly poised to take advantage of this world of transition. We have a lot of people open to ideas about how our state can be a major player for the future of our country and the world."

Mr. Dale Dekker
Founder, Dekker Perich & Sabatini

place—it is about ensuring that the economic benefits stay in New Mexico, reducing underemployment and driving long-term, inclusive growth.

Achieving these goals demands that economic development strategies be inclusive and responsive to the diverse needs of communities across the state. While large-scale innovation and industrial expansion remain critical, they must be balanced with targeted support for rural and smaller local economies. Dr. Holloway noted that industrial growth often overlooks the challenges faced by rural areas, where small businesses serve as essential drivers of economic resilience and community transformation. "The needs of small businesses are equally important as the needs of large manufacturers and tech industries," he explained. Building on this perspective, Ms. Keith advocated for small businesses being more involved in the economic planning of New Mexico. "We cannot only have large employers at the table. We need space for small businesses to share their voice and contribute to decisions. If we are not doing it together, it is not going to happen," she stated. By embracing the strengths and voices of all communities, New Mexico can promote sustainable, equitable economic growth that benefits the entire state.

However, fostering such inclusive growth requires more than collaboration—it demands a clear, long-term vision supported by sus-

"How do we work together to be as nationally known for our economic development practices as we are for our moonshots on the research side?"

Ms. Mary Monson
Senior Manager, Technology Partnerships and Business Development
Sandia National Laboratories

"If we can focus for five to ten years, New Mexico will succeed. We need to build systems that will not change with shifts in political environment."

Dr. James Holloway
Provost and Executive Vice President, Academic Affairs
University of New Mexico

tained, strategic investment that transcends short-term political cycles. To fully leverage its strengths, New Mexico must commit to a consistent 20-year strategy that prioritizes bold investments in higher education and talent recruitment from around the world. Mr. Dekker pointed out, institutional alignment is essential to "buy the human capital" necessary to establish New Mexico as a leader in advanced technology, building a global network of students and innovators who will raise all boats and improve the well-being of all New Mexicans.

Central to this strategy is the careful and deliberate use of New Mexico's large sovereign wealth fund. Often viewed as a rainy day fund, it is worth noting that New Mexico experiences plenty of "rain" in the form of pressing challenges such as poverty and underperformance in the education system. **Rather than letting these issues stall progress, the sovereign wealth fund should be used strategically over decades to provide stable support for workforce development, research, and innovation.** Thoughtful stewardship of this fund will offer the fiscal discipline and long-term perspective necessary to elevate New Mexico's position in the global technology landscape.

New Mexico needs to find its distinct voice—a "moonshot mentality" that embraces the future with courage rather than fear. By taking on this challenge, the state can not only address its current struggles but also create breakthroughs that set it apart as a beacon of innovation and opportunity for years to come.

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About the Council on Competitiveness

For nearly four decades, the Council on Competitiveness (Council) has championed a competitiveness agenda for the United States to attract investment and talent, and spur the commercialization of new ideas.

While the players may have changed since its founding in 1986, the mission remains as vital as ever—to enhance U.S. productivity and raise the standard of living for all Americans.

The members of the Council—CEOs, university presidents, labor leaders and national laboratory directors—represent a powerful, nonpartisan voice that sets aside politics and seeks results. By providing real-world perspective to Washington policymakers, the Council's private sector network makes an impact on decision-making across a broad spectrum of issues—from the cutting-edge of science and technology, to the democratization of innovation, to the shift from energy weakness to strength that supports the growing renaissance in U.S. manufacturing.

The Council's leadership group firmly believes that with the right policies, the strengths and potential of the U.S. economy far outweigh the current challenges the nation faces on the path to higher growth and greater opportunity for all Americans.