

September 2026 | CAMINO Collaborative

New Mexico Made

The New Frontier of Advanced Manufacturing

The CAMINO Collaborative Vision

Imagine the future.

Near the Sandia Science & Technology Park, where historic Route 66 meets Eubank, a new kind of campus is alive with purpose. Inside are Sandia National Laboratories researchers working shoulder-to-shoulder with manufacturers, students, and innovators pushing the frontiers of advanced manufacturing to accelerate energy, quantum technologies, aerospace, and national security. Prototypes that once took months now move from concept to testing in days—even hours. This is future-ready engineering powered by a future-ready workforce. In this space, the U.S. has regained something it had nearly forgotten: **The ability to build fast. To build well. And to build in New Mexico.**

What began as an urgent national security investment has become one of the most dynamic advanced manufacturing innovation ecosystems in the country. And its impact now reaches far beyond mission needs, helping the state tackle critical community challenges—from rapid-built, sustainable housing to next-generation clean-energy systems.

The campus is a magnet for visiting scientists, industry partners, and ambitious entrepreneurs. National security fellows, engineering teams and students convene from New Mexico and across the country. A campus café run by a local restaurateur has become the informal hub where machinists, physicists, engineers and designers trade ideas. A new hotel hosts visitors and interns from around the world. Sculptures and murals by New Mexico artists animate the courtyards, reflecting a culture where creativity and technical rigor reinforce one another.

And perhaps most transformative of all: **the people who power this ecosystem are New Mexicans.**

Every elementary school student in the region now visits this campus, sparking early curiosity. High school students are immersed in robotics, additive manufacturing and microelectronics. Many of these learners immediately enter high-skill, high-wage technician careers with great benefits and clear advancement pathways; Others pursue engineering and other relevant degrees at the university. **This is the only campus in the country** where a K–12 school, community

colleges and universities, a Manufacturing Extension Partnership (MEP), industry partners, and a national laboratory work side-by-side in a shared innovation environment.

The result is unmistakable: This initiative has become a talent pipeline, a launchpad for industry, and the backbone of a thriving entrepreneurial ecosystem. National media now cover New Mexico as a model for how America rebuilds its industrial capacity, strengthens our shared national security, expands economic mobility, and solves real community challenges.

This is what it looks like when a state—and a nation—decides to build again.

A Generational Opportunity

New Mexico stands at an inflection point reminiscent of the Manhattan Project era, when the world's most visionary scientists and engineers came to this landscape and redefined what was possible. This state has always been a place unafraid to pioneer new technologies—a landscape where bold ideas are tested, refined, and brought into the world. Today, advanced manufacturing, quantum technologies and artificial intelligence are converging into a new frontier that demands speed, integration, and a workforce fluent in both digital and physical systems.

With Sandia and Los Alamos anchoring the nation's premier engineering and physics capabilities, **location becomes destiny.** Innovators must be close enough to walk ideas across the street, test them the same afternoon, and refine them with the people who understand the mission best. This campus sits alongside Sandia but largely “outside the fence” and accessible to students, industry and entrepreneurs. The ideal location, where proximity fuels discovery.

This is the CAMINO Collaborative. A flagship 200,000+ square feet of facilities and broader campus designed to be a magnet for advanced manufacturing, business innovation and workforce development. This campus is built to extend the impact of a **\$100 million federal investment in advanced manufacturing** at Sandia, transforming the anchor investment into a thriving ecosystem. CAMINO is a program of Sandia National Laboratories—the Center for Advanced

Manufacturing and Innovation. The CAMINO Collaborative is a broader industry, entrepreneurial, workforce and community-driven initiative that surrounds and amplifies this work, leveraging the advanced manufacturing infrastructure anchored at Sandia.

Modeled on the spirit of Bell Labs, Skunk Works, Xerox PARC, and Google X, the CAMINO Collaborative is built for the speed and intensity of 21st-century competition. Inspiration is drawn from Oak Ridge National Laboratory's Manufacturing Demonstration Facility in Tennessee, an initiative that generated **\$5.5 billion in business and government investment**. New Mexico's campus will be bigger and more robust, bringing prototype-to-production capabilities.

This vision is strengthened by something uniquely New Mexican: a deep, generative culture of creativity. For centuries, artists, makers, and craftspeople have shaped the state's identity as a place where imagination, material expression, and bold experimentation coexist. That same creative energy—rooted in diverse cultural traditions and a willingness to push boundaries—forms an underappreciated but powerful advantage in the innovation economy.

CAMINO in Spanish means path, road, or journey. It signals movement, direction, and shared purpose. Collaborative is equally intentional, it represents a mindset and a framework for how New Mexico will grow—together.

The Advanced Manufacturing Working Group

The Advanced Manufacturing Working Group (AMWG) envisions New Mexico as the next frontier of advanced manufacturing innovation. Formed as a public-private partnership in late 2025 to leverage and expand Sandia National Laboratories' \$100 million, five-year investment in advanced manufacturing, the AMWG brings together leaders from the national labs, industry, economic development, community colleges and universities, K–12 education, and government.

The CAMINO Collaborative Goal

Build a world-class, community-anchored Advanced Manufacturing campus to support and grow New Mexico's science and tech strengths in advanced energy, quantum technologies, aerospace, national security, and emerging industries. This campus will accelerate innovation, strengthen national competitiveness, and expand economic mobility by connecting the state's scientific assets, industry partners, entrepreneurs, educators, and workforce into a unified engine of growth.

Phase 1 Objectives (October 2025 – April 2026)

- **LISTEN:** 50+ conversations across industry, education, government, and community organizations to understand statewide appetite for advanced manufacturing. Establish an advisory committee and working group.
- **LEARN:** Qualitative research among 25 cross-sector leaders to understand needs, opportunities, and barriers to inform whitepaper.
- **RESEARCH:** Comprehensive whitepaper synthesizing strategic rationale, facility design considerations, funding and financing opportunities, workforce pathways, and community insights.
- **INFORM:** Business engagement planning to build community alignment and momentum.

CAMINO Collaborative Objectives (May 2026 on)

- Develop a Statewide Talent Pipeline
- Deepen Lab-to-Industry Integration
- Expand Statewide Economic Opportunity and Mobility
- Catalyze a Vibrant Innovation Ecosystem
- Build Infrastructure for Long-Term Growth
- Shape a Communications and Reputation Strategy that Elevates the Initiative—and the State—as the Next Epicenter of Innovation and Advanced Economy Jobs

Big, Audacious Long-Term Aspirations

New Mexico becomes a model for the world.

Other regions—and entire countries—begin emulating the CAMINO Collaborative approach, recognizing New Mexico as a place that has cracked the code on innovation, collaboration, and community-anchored manufacturing.

The state is known for excellence across the board.

New Mexico rises into the top tier nationally—top 5 in education, innovation, health outcomes, and quality of life—reflecting a thriving, inclusive economy powered by advanced manufacturing.

Albuquerque becomes a global gateway. The airport expands exponentially over the next decade to support booming domestic and international business travel, transforming New Mexico into a 21st-century hub for commerce, talent, and technology exchange.

Opportunity is abundant and upward mobility is real.

High-quality jobs are plentiful, career pathways are clear, and New Mexicans can build meaningful, prosperous lives without leaving the state.

High-tech industries choose New Mexico—and stay.

Companies in quantum, aerospace, advanced energy, AI, and next-generation manufacturing establish roots, scale operations, and grow long-term here.

New Mexico becomes a constant source of innovation

news. A steady drumbeat of startups, breakthroughs, new products, and national media coverage positions the state as one of the most exciting innovation ecosystems in the country.

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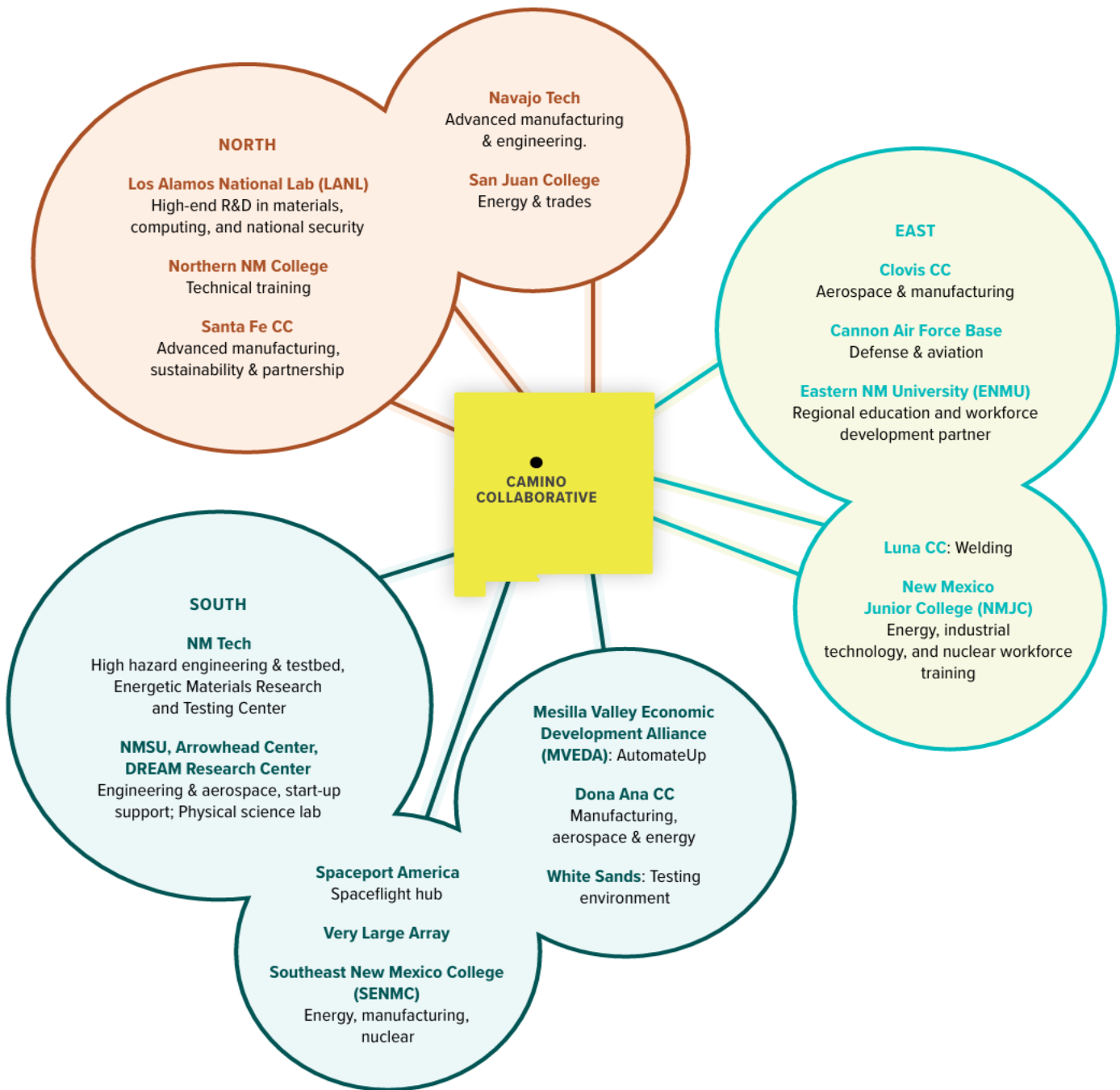
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See final page for members of the Advanced Manufacturing Working Group

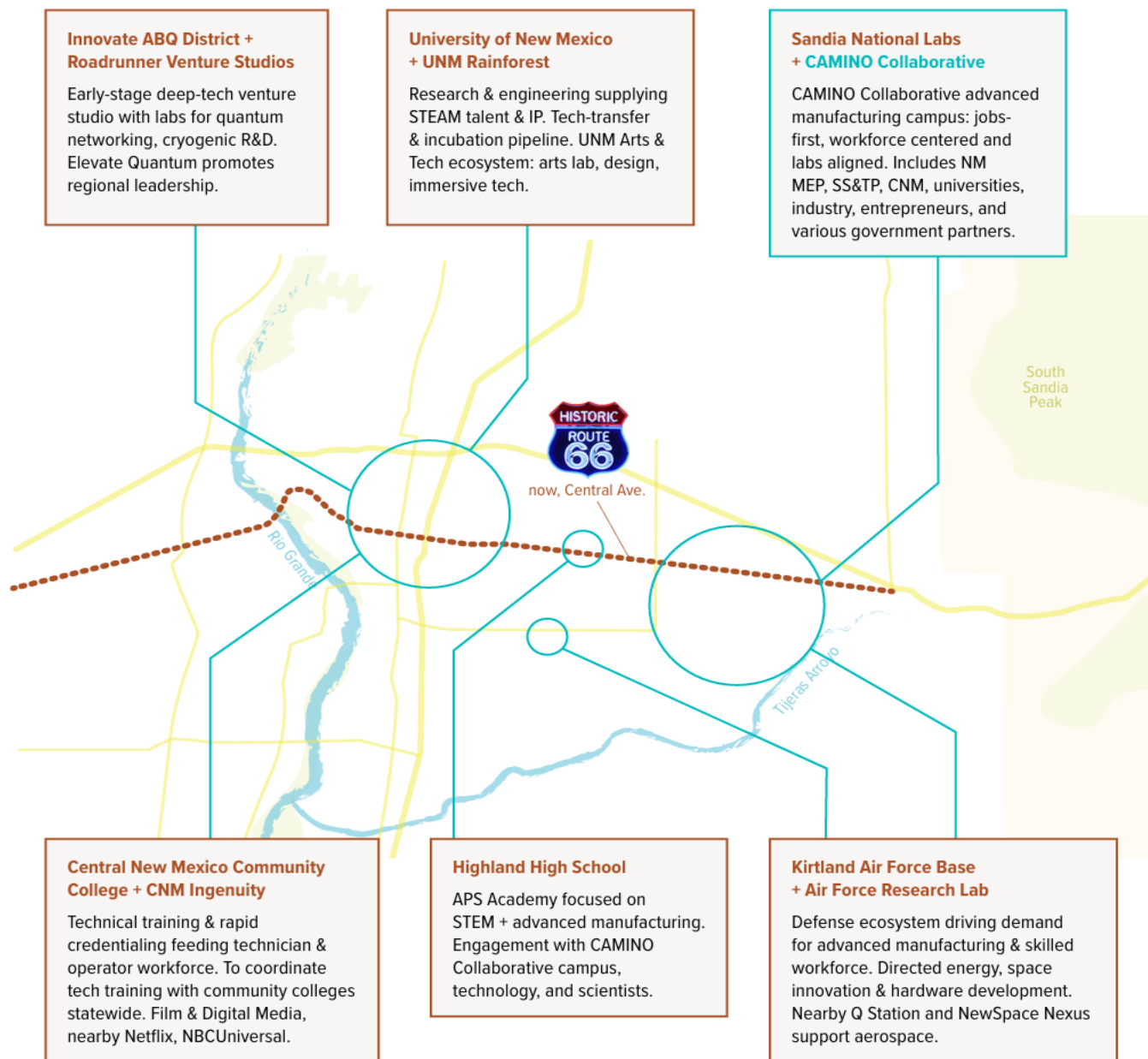
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NM's Advanced Economy Ecosystem



This map is illustrative and does not represent a comprehensive list of all potential partners

ABQ STEAM* Corridor



*STEAM stands for Science Technology Engineering Art & Mathematics

This map is illustrative and does not represent a comprehensive list of all potential partners

Student working on automated manufacturing machinery in the Mechatronics program at Central New Mexico Community College (CNM).

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CASE STUDY #1

WHAT TENNESSEE TAUGHT THE COUNTRY ABOUT BETTING BIG ON ADVANCED MANUFACTURING

Insight for New Mexico: Robust economic impact and job growth

In 2012, the U.S. Department of Energy made a strategic early investment to launch the **Manufacturing Demonstration Facility (MDF) at Oak Ridge National Laboratory (ORNL)**. What began as a bold experiment — an open-access hub where industry, academia, researchers, and government could build the future together — quickly became one of the most influential manufacturing engines in the United States.

From that initial federal investment, MDF and its sister facility, the Carbon Fiber Technology Facility, catalyzed **more than \$5.5 billion in follow-on private and government investment**. Their work has since reshaped supply chains, accelerated commercialization, and strengthened U.S. competitiveness across energy, aerospace, transportation, infrastructure, and national security.

But the real story isn't just the dollars. It's the ripple effect — the way one facility became a magnet for talent, a launchpad for new companies, and a model for how advanced manufacturing can transform a region.

A Place That Built Momentum — Fast

Walk through MDF's 110,000-square-foot facility and you feel it immediately: the hum of machines, the mix of students and engineers, the sense that problems are being solved in real time.



Since its founding, MDF has:

- Partnered with **380+ industry partners**, including **300+ Cooperative Research and Development Agreements (CRADAs)** — one of the strongest industry engagement portfolios in the Department of Energy (DOE) system.
- Generated **2000+ jobs** and **400+ patents and applications**, fueling new companies and new technologies.
- Trained **1,300+ interns** and helped power America's Cutting Edge (ACE), which trained **20,000+ students** nationwide, from all 50 states, in Computer Numerical Control (CNC) Machining.
- Welcomed **52,000+ visitors**, becoming a national convening point for innovation.

And the commercial outcomes are stunning. MDF-enabled technologies helped launch new facilities across the country — from Lincoln Electric's 75,000-square-foot wire-arc deposition center in Ohio to GKN Aerospace's titanium deposition facility in Texas. These aren't pilot projects. They're real companies, real jobs, and real supply chains.

Every ecosystem has a catalyst. For MDF, that catalyst was Lonnie Love — a nationally recognized engineer and pioneer in additive manufacturing. At ORNL, Lonnie became known as the “matchmaker of advanced manufacturing,” the person who could see connections others missed and bring the right partners together at exactly the right moment.

He thought he was retiring.

Instead, New Mexico recruited him.

Lonnie is now a Sandia National Labs fellow, bringing to New Mexico the same ethos that made MDF a national success: radical collaboration, speed, and a belief that advanced manufacturing is the backbone of America's economic future.

A Platform for Solving Community Problems

While the MDF has supported critical defense and aerospace applications, its most transformative impact has been much closer to home: using advanced manufacturing to solve real community challenges.

Two of the nation's largest consumers of energy are housing and transportation. And yet, energy use doesn't stay fixed — it moves with people. When someone is at home or at work, the building consumes energy while their car sits idle. When they leave, the building's energy use drops while the car's energy use rises.

This simple observation sparked a radical question: What if housing and transportation could share energy?

That question led to the Additively Manufactured Integrated Energy (AMIE) program — one of MDF's most ambitious demonstrations of community-focused innovation. Working with industrial partners including Clayton Homes, Skidmore, Owens & Merrill, Techmer, and Cincinnati Incorporated, MDF designed and manufactured an integrated system that connected a hybrid electric vehicle with a solar-powered 3D-printed building.

Using a lab-developed wireless power transfer technology, energy could flow in either direction between the vehicle and the home. When the sun wasn't shining, the car could power the house. When the house generated excess solar energy, it could charge the car.

This opened the door to a new wave of community-centered innovation. One of the most compelling examples emerged in Maine, where designers, engineers, and researchers from the University of Maine, Kairos Power, ORNL, and other partners asked another transformative question: What if we could turn wood waste into affordable, sustainable housing?

Together, they demonstrated 3D-printed homes made from wood-based materials and wood waste — a next-generation building material that dramatically reduces cost, construction time, and environmental impact.

Imagine building a home in hours instead of years. Imagine using local materials that would otherwise go to waste. Imagine a housing solution that is both affordable and climate-smart. And imagine a future where your car and your home are not just consumers of energy, but tools for lowering your overall energy costs.

This is the kind of disruptive, community-focused problem-solving that advanced manufacturing makes possible. And it's exactly the kind of innovation the CAMINO Collaborative is designed to accelerate.

Voices Shaping the Vision

To ensure this whitepaper is grounded in community insight, entrepreneurial mindset, and current perceptions, 25 in-depth qualitative interviews occurred with leaders across national labs, industry, education, workforce, advanced manufacturing, policymaking and government.

Research can play an important role in shaping strategy, capturing nuance, and identifying friction points, opportunities, and cultural dynamics that influence whether an initiative succeeds. Because qualitative research is

a snapshot in time, it offers a pulse check on community readiness, enthusiasm, and industry appetite. These findings represent a synthesized version of the research, with a longer form available upon request.

In this case, the enthusiasm is unmistakable. Stakeholders across sectors expressed urgency, optimism, and a shared belief that New Mexico is at a rare moment of opportunity for advanced manufacturing growth.

Qualitative Research Overview: Voices Shaping the CAMINO Collaborative

INTERVIEWS OCCURRED: OCTOBER – NOVEMBER, 2025

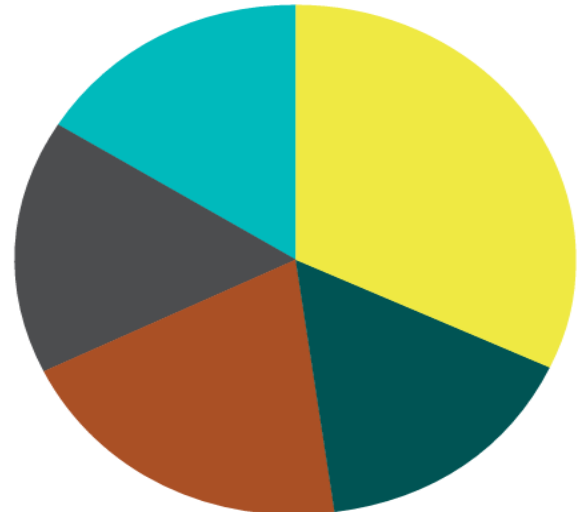
GOAL: Explore needs, friction points, and opportunities to ensure the CAMINO Collaborative is grounded in lived experience and aligned with community and national priorities.

OBJECTIVES

- Identify barriers
- Surface opportunities
- Capture cultural dynamics
- Understand readiness
- Inform strategy

APPROACH

- 25 semi-structured interviews
- 18 New Mexico leaders + 7 national experts
- Representation across 5 sectors
- Thematic coding + synthesis + iterative refinement



WHO WE INTERVIEWED

- INDUSTRY
- GOVERNMENT
- NATIONAL LABS
- EDUCATION & WORKFORCE
- NATIONAL MFG. LEADERS

1. WORKFORCE IS THE CENTRAL CONSTRAINT

Many stakeholders, regardless of sector, identified workforce as the single greatest barrier to growth. Without early STEM (science, technology, engineering, and math) identity formation, educator training, apprenticeships, and employer-aligned credentials, New Mexico cannot meet demand for increased industry growth that will result from this initiative. The CAMINO Collaborative must nurture a statewide talent pipeline that begins in elementary school and extends through adult upskilling. This is an imperative for statewide industry workforce readiness.

COMMUNITY COLLEGE (CNM):

“There is a mismatch between talent and employment opportunities. We have to do things differently. We have to work differently. Access to brilliant scientists — people you would rarely have access to — excites learners. Those connections are important.”

— Tracy Hartzler, President, CNM

2. TEACHERS AND MENTORS ARE FOUNDATIONAL

Educators shape STEM identity long before students choose a career. Stakeholders stressed that teachers need exposure to real-world advanced manufacturing, professional learning, and industry partnerships to confidently guide students. Without educator readiness, the talent pipeline collapses before it begins. The CAMINO Collaborative can ensure educators leverage subject matter experts to complement their teaching. This is a big value proposition of the initiative.

K-12 EDUCATION (ALBUQUERQUE PUBLIC SCHOOLS):

“If I need to prepare young minds for these jobs, I need experts sitting next to me. Also, professional learning is one of our biggest barriers—and this includes our teacher pipeline.”

— Sheri Jett, Chief Academic Officer, APS

3. PROTOTYPE-TO-PRODUCTION IS THE STRATEGIC GAP

New Mexico excels at invention but fails to capture its full economic value when production moves out of state. Stakeholders emphasized that the CAMINO Collaborative’s ability to support repeatable, small-series manufacturing adjacent to the labs is the state’s most important differentiator. This capability keeps Intellectual Property (IP), jobs, supplier spend, and federal investment local — and positions New Mexico as a national leader in secure, high-consequence manufacturing.

AEROVIRONMENT / BLUE HALO

“New Mexico should be known as the place that takes early prototypes and transitions them to production at scale.”

— Mason Martinez, Director of Operations, Aerovironment



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4. SPEED IS A NATIONAL SECURITY IMPERATIVE

Federal agencies and defense partners increasingly require rapid iteration and accelerated delivery. The CAMINO Collaborative's integrated design → prototype → small-run production model compresses timelines from months to hours, aligning with urgent national-security needs. Speed is a strategic advantage.

FEDERAL LAB (AIR FORCE RESEARCH LABS):

“The Space Rapid Capabilities Office wants to find ways to move faster... CAMINO can potentially support those goals. Speed is the key component.” — Gabe Mounce, Deputy Director at SpaceRCO

5. REDUCE FRICTION BETWEEN LABS AND INDUSTRY

While national labs offer mission pull and technical validation, their culture, IP frameworks, and security protocols can deter industry. Stakeholders stressed the need for transparent access models, standardized IP and tech transfer templates with predictable timelines for licensing, and a governance structure that ensures fairness and agility. CAMINO Collaborative must have a strong private sector mindset and be adjacent to — not absorbed by — the labs.

INDUSTRY (KAIROS POWER):

“With a private sector mindset, design adjacency must reduce friction and accelerate commercialization.”

— Craig Mayberry, Director of Manufacturing Planning & Quality, Kairos Power



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6. AI-READY INFRASTRUCTURE IS ESSENTIAL

Artificial Intelligence (AI) is reshaping design, prototyping, and production. Stakeholders emphasized that the CAMINO Collaborative must be built as a smart, AI-enabled facility from day one, integrating data, automation, and advanced simulation into every workflow. AI is not an add-on, it is foundational to accelerating innovation and expanding the talent pool.

NATIONAL LAB (SANDIA):

“AI has to be integrated into the facility and its operations...if not, it will be a bunch of standalone machines.”

— Jen Gaudioso, Director of the Center for Computing Research, SNL

7. DUAL APPROACH: EARLY IDENTIFICATION + INCUMBENT WORKER UPSKILLING

New Mexico must simultaneously build the next generation of talent and also reskill the current workforce. Leaders emphasized the need for stackable credentials, micro-training, apprenticeships, and visible career pathways that convert interest into hires. This dual approach is essential to retaining local talent and meeting immediate employer demand.

NATIONAL MANUFACTURING LEADER (AMERICA MAKES):

“We’ve shifted our work to focus on incumbent workers — how are we reskilling and upskilling people?” — John Wilczynski, ED, America Makes

8. POLICY, INCENTIVES, AND SITE READINESS MUST EVOLVE

To attract and scale advanced manufacturing, New Mexico needs predictable, early-stage incentives, equipment-purchase exemptions, and site-readiness investments. Stakeholders called for innovative financing tools, modular Industrial Revenue Bond (IRB) alternatives, and community investments that unlock private-sector growth. The State of New Mexico already has certain incentive mechanisms (LEDA, IRB, etc.) to attract and grow the advanced manufacturing job base, but those mechanisms can benefit from increased funding.

GOVERNMENT (BERNALILLO COUNTY ECONOMIC DEVELOPMENT):

“Create a special tax incentive district for the CAMINO Collaborative — exempt equipment purchases without needing an IRB.”

— Marcos Gonzales, Bernalillo County Economic Development

9. STORYTELLING DRIVES TALENT, INVESTMENT, AND POLITICAL WILL

Powerful narratives shape site selection, workforce attraction, and public support. Leaders emphasized that an advanced manufacturing push must be accompanied by a powerful content and storytelling engine that showcases early wins, elevates New Mexico’s reputation as a manufacturing leader, and inspires students, families, employers, and policymakers. Storytelling changes a CEO’s site calculus as much as tax rates.

GOVERNMENT (CITY OF ALBUQUERQUE ECONOMIC DEVELOPMENT):

“We need to get the storytelling right... to create momentum and excitement that tomorrow will be better than yesterday.”

— Max Gruner, City of Albuquerque Economic Development



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10. CAMINO COLLABORATIVE IS A COMPETITIVE MULTIPLIER

Leaders consistently described this initiative as a force multiplier that aligns labs, industry, workforce, policy, and place. It is the throughline that enables and accelerates all the state’s economic development focus areas of advanced energy, quantum technologies and aerospace & defense.

POLICYMAKER (HOUSE OF REPRESENTATIVES):

“If the CAMINO Collaborative succeeds, New Mexico will realize it can do this. That sense of unity could lead to positive change in areas like crime and education.”

— Rep. Meredith Dixon, NM State Legislature



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Strategic Rationale, Landscape, & Needs Assessment for Advanced Manufacturing in New Mexico

Advanced manufacturing is reshaping the global economy, driven by rapid leaps in AI, robotics, advanced materials, and digital production systems that are collapsing the distance between design and deployment. At the same time, geopolitical shocks and supply-chain vulnerabilities are pushing nations to rebuild capacity closer to home, making advanced manufacturing a central pillar of economic resilience and technological leadership.

For New Mexico, AM represents a strategic opportunity to diversify its economy, create high-quality jobs, and

strengthen its position in critical national and global value chains. This section of the whitepaper offers an evidence-based assessment of the rationale for AM as a growth cluster in New Mexico, analyzes national and global demand trends, inventories the state's AM ecosystem assets, benchmarks successful national and international models, and identifies public benefits and policy needs. Drawing on a wide range of sources—including state economic plans, labor market data, federal strategies, and industry analyses—this report offers a roadmap for leveraging New Mexico's unique assets to build a robust, future-ready AM ecosystem.

I. The Strategic Case for Advanced Manufacturing in New Mexico

A. Economic Diversification and Resilience

New Mexico's economy has long been shaped by an outsized dependence on two sectors: government and oil and natural gas extraction. As of 2023, the public sector accounted for nearly a quarter of the state's workforce, a share far above the national average, while oil and gas contributed up to 25% of the general fund despite representing a much smaller portion of total employment (see [Bureau of Labor Statistics](#) and [Legislative Finance Committee](#) report). This concentration has made the state highly sensitive to federal budget cycles and commodity price volatility, contributing to decades of slow income growth and a median household income that remains 16% to 22% below the U.S. average. Yet recent trends point to meaningful progress: by late 2025,

New Mexico ranked third in the nation for household income gains: [up 8.9% year-over-year and first in family income growth](#), signaling early momentum toward a more diverse and resilient economy.

Advanced manufacturing offers a pathway out of this boom-bust cycle. By fostering and supporting innovation-driven industries, such as quantum, advanced energy, aerospace, and emerging growth areas, New Mexico can broaden its economic base and create sustainable, high-wage employment. The [state's economic development strategies](#), including the 2025 State Plan Update, the Empower and Collaborate roadmap, and the 2025 New Mexico Science & Tech Roadmap explicitly identify AM as a priority sector for diversification and long-term growth.



Informed by the [State of NM Science & Tech Roadmap, 2025](#)

New Mexico stands at a pivotal moment in its transition from a research-driven innovation economy to one capable of sustaining advanced manufacturing at scale. While the state possesses extraordinary scientific assets—national laboratories, research universities, specialized testbeds—it has not yet built the commercial product development and manufacturing infrastructure, partnerships, or environment needed to convert these strengths into a durable economic advantage.

Stakeholders interviewed in the [2025 New Mexico Science & Tech Roadmap](#) repeatedly pointed to structural barriers, including the state's complex Gross Receipts Tax (GRT) system, inconsistent long-term legislative commitment, and the absence of high-profile, leadership-driven public-private partnerships. These gaps have slowed progress in sectors where New Mexico should be even more competitive.

At the same time, the opportunity landscape is expanding rapidly. Quantum-enabled manufacturing, advanced energy systems, and defense-related production all represent areas where New Mexico has early footholds and unique assets. Quantum sensing, materials, and photonics research at the national labs and universities could underpin new manufacturing capabilities, but only if the state invests in translational infrastructure—innovation-to-manufacturing at scale with accessible pilot lines, shared cleanrooms,

cryogenic and photonic testbeds—and creates mechanisms to move technologies from lab to market.

Additionally, the [global surge in clean energy investment](#) is driving demand for hybrid and electric vehicles (EV), batteries, solar, hydrogen, nuclear, wind, geothermal, fusion, and grid-related components. New Mexico's natural resources and test environments position it as a proving ground for these technologies, but capturing value requires attracting anchor manufacturers, building supplier ecosystems, and supporting integrated demonstration sites that link early-stage research with commercial deployment.

Defense and space manufacturing add another dimension to this opportunity. National security concerns around microelectronics, hypersonics, directed energy, and advanced materials are reshaping federal investment priorities. Industry leaders emphasized that New Mexico could become a national model for [modernizing commercial development and production](#)—leveraging AI, robotics, advanced sensors, and rapid prototyping—to strengthen ties between labs, manufacturers, and venture capital. Doing so would not only enhance national resilience but also diversify the state's economy in strategically important sectors.

Recent New Mexico legislative action underscores New Mexico's commitment to economic diversification and building an innovation-driven economy. In the 2025–2026 session, the state advanced more than \$370 million in one-time investments across quantum technologies, advanced and clean energy, bioscience, and workforce development—building on the earlier creation of the [Technology & Innovation Division](#) and the Research, Development & Deployment (RD&D) Fund.

Major appropriations included \$110 million for the RD&D Fund (with at least \$40 million dedicated to quantum), a \$49.3 million Defense Advanced Research Projects Agency (DARPA) match to support quantum benchmarking, and \$38 million for a centralized quantum user facility. Additional investments strengthen advanced energy and industrial decarbonization efforts, expand defense and aerospace testing capacity at New Mexico State University (NMSU) and New Mexico Tech, and fund targeted workforce training programs at community colleges aligned with advanced economy jobs.

Higher education institutions received support for endowed faculty positions, bioscience equipment, and expanded supercomputing access, while policy updates—such as enhancements to the advanced energy tax credit, a ten-year extension of the High-Wage Jobs Tax Credit, and expanded C-PACE financing—modernized the state's competitiveness toolkit. Together, these actions form part of a multi-year, \$1 billion innovation roadmap through 2029, signaling sustained state commitment to the industries expected to drive national and global growth in the coming decade.

B. Alignment with National Priorities and Federal Investment

The national landscape only amplifies the opportunity for advanced manufacturing in New Mexico. The U.S. government's [National Strategy for Advanced Manufacturing \(2022\)](#) and the [National Defense Science and Technology Strategy \(2003\)](#) both underscore the urgency of revitalizing domestic production capacity, securing critical supply chains, and expanding a highly skilled technical workforce.

Federal legislation—including the CHIPS and Science Act, the Inflation Reduction Act, and the Bipartisan Infrastructure Law—unleashed unprecedented funding for manufacturing, infrastructure, and clean energy, with New Mexico securing

more than \$1.1 billion in federal climate and infrastructure research funding since 2022.

A new national initiative, the [Genesis Mission](#), further highlights the strategic importance of AM for national competitiveness. Announced by the U.S. Department of Energy, Genesis has a national mission to build the world's most powerful scientific platform by integrating supercomputing, AI systems, experimental facilities, and large-scale scientific datasets to accelerate discovery, strengthen national security, and drive energy innovation. As a state anchored by national laboratories and a growing advanced computing and quantum ecosystem, New Mexico is uniquely positioned to align with Genesis by expanding the manufacturing capabilities needed to translate scientific breakthroughs into deployable technologies.

Various federal and state investments are catalyzing private-sector commitments across New Mexico's priority technology sectors. In addition to Intel's \$3.5 billion expansion in Rio Rancho and the \$5 billion Digital Infrastructure Campus in Santa Teresa, several high-growth companies have recently announced major projects that reinforce New Mexico's emergence as a national hub for advanced energy, quantum technologies, and next-generation manufacturing. Some recent announcements include:

- [AeroVironment \(formerly BlueHalo\)](#) is investing more than \$30 million to expand its defense manufacturing campus in Albuquerque, a project expected to create over 450 new advanced manufacturing and engineering jobs and generate more than \$670 million in economic impact over the next decade. This expansion deepens New Mexico's role in the national-security industrial base and increases demand for precision manufacturing, robotics, and systems-integration talent.
- [X-Bow Systems](#) is headquartered in New Mexico and produces advanced manufactured solid rocket motors and launch systems. It recently acquired Evolution Space and is investing in domestic manufacturing capabilities.
- [Pacific Fusion](#) selected New Mexico for its first U.S. Research and Manufacturing Campus, a \$1 billion investment at Mesa del Sol that will create approximately 200 permanent high-skill jobs and hundreds of additional construction jobs, positioning the state at the forefront of the commercial fusion energy industry.

II. STRATEGIC RATIONALE

- **Castelion**, a defense-focused advanced manufacturing and energetics company, has expanded operations in New Mexico to support national security supply chains. The company anticipates this expansion will create more than 300+ high-paying jobs and result in over \$650 million in economic output during the next decade. Castelion is planning over \$100 million investment within four years with added investment to come.
- **Roadrunner Venture Studios** was selected by the New Mexico Economic Development Department to lead a \$25M quantum initiative, with commitments to launch at least five new quantum and advanced-computing companies and recruit additional firms into New Mexico's emerging quantum cluster. Roadrunner is developing a quantum campus in Albuquerque's Innovation District, expanding the state's capacity for quantum networking, packaging, and rapid hardware development.
- **Other advanced energy and aerospace firms**, such as **Kairos Power** are deepening their New Mexico presence through expanded manufacturing, testing, and engineering operations. The company has announced approximately 100 high-wage jobs as part of its Hermes reactor development and related activities, further strengthening the state's advanced energy ecosystem.

C. Competitive Advantages

New Mexico offers a combination of geographic, scientific, and industrial assets. Its strategic location at the intersection of I-10, I-25, and I-40—paired with proximity to the U.S.–Mexico border, Class I rail, and international air cargo—positions the state as a natural logistics and manufacturing hub. Low energy costs, abundant renewable resources, and a number of tax incentives further strengthen the state's competitiveness for advanced manufacturing investment.

What truly differentiates New Mexico, however, is the depth of its innovation ecosystem: the state is home to three federal laboratories—[Los Alamos National Laboratory](#), [Sandia National Laboratories](#), and the [Air Force Research Laboratory](#)—three research universities ([UNM](#), [NMSU](#), and [NM Tech](#)) and a growing network of community colleges and technical training centers. These collectively create a dense concentration of engineering and science talent.

The state also hosts some of the nation's most capable test ranges, including:

- [Spaceport America's FAA-licensed vertical launch site](#),
- [New Mexico Tech's energetic materials and explosives testing facilities](#),
- The [Air Force Research Laboratory's directed-energy and high-power testbeds](#), and
- [White Sands Missile Range weapons, sensor, and field-testing environments](#).

These assets allow companies to validate hardware, materials, propulsion systems, autonomous platforms, and defense technologies under real-world conditions that few states can replicate.

New Mexico's competitive position is further strengthened by the emergence of a coordinated, large-scale capital strategy to support innovation and commercialization. [Through the State Investment Council's \\$1.9 billion Strategic Venture Capital Program](#), the state is actively deploying capital to attract, grow, and retain high-technology companies. This effort—combined with targeted legislative investments through the Economic Development Department and other agencies—signals a shift toward a more integrated, state-level industrial policy.

As advanced manufacturing becomes increasingly central to national competitiveness, particularly as innovation shifts from software to physical systems, access to aligned, patient capital will be critical to bridging the “valley of death” between research and production. New Mexico is beginning to distinguish itself not only through its research assets, but through its willingness to pair those assets with coordinated capital deployment—creating a more complete ecosystem for translating breakthrough technologies into scalable manufacturing enterprises.

II. National and Global Demand Trends for Advanced Manufacturing

A. Global Market Growth and Technology Adoption

The global manufacturing market is projected to grow from \$14.85 trillion in 2025 to \$20.76 trillion by 2032, with a compound annual rate of growth of 4.9%. Growth is led by automotive, electronics, aerospace, and semiconductor sectors, all accelerating adoption of Industry 4.0 technologies—AI, robotics, additive manufacturing, and the Industrial Internet of Things (IIoT).

Asia Pacific remains the largest manufacturing region, but North America is the fastest-growing, driven by reshoring, supply chain resilience, and federal incentives. U.S. manufacturers are rapidly modernizing: nearly 80% plan to allocate more than 20% of their improvement budgets to automation, analytics, and AI by 2026, per [Deloitte’s 2026 Manufacturing Survey](#). And 88% percent expect investments to continue or increase in the next fiscal year.

GLOBAL MANUFACTURING MARKET BY REGION (2025)		
REGION	MARKET SHARE (%)	KEY DRIVERS
Asia Pacific	42.7	Scale, supply chains, government policy
North America	26.5	Innovation, reshoring, federal incentives
Europe	22.3	Precision, sustainability, Industry 4.0
Rest of World	8.5	Emerging markets, resource-based growth

Sources: [International Yearbook of Industrial Statistics](#); [OECD Industrial Production](#)

U.S. STATES LEADING IN RELEVANT MANUFACTURING DOMAINS		
STATE	DETAILS	KEY FINDING
Ohio	Home to America Makes (national additive manufacturing institute), strong robotics & automation base, deep supplier networks	Benchmark for public-private manufacturing institutes; strong small and medium size enterprise adoption
Tennessee	Oak Ridge National Laboratory’s MDF (Manufacturing Demonstration Facility) , world-class in additive, composites, and energy hardware	Closest comparison to CAMINO Collaborative’s lab-to-production model
Texas	Explosive growth in aerospace, defense, semiconductors, and energy manufacturing; megasites and aggressive incentives	Dominant in scale; strong for large-format production and supply chain depth
Arizona	CHIPS-driven semiconductor hub ; advanced packaging, materials, and fab-adjacent manufacturing	Strong microelectronics ecosystem; rising costs and water constraints
Colorado	Quantum, aerospace, and advanced computing R&D powerhouse	High R&D density but limited manufacturing capacity — complementary to NM
Massachusetts	Robotics, AI, advanced materials, and biotech manufacturing	High innovation density; extremely high costs limit scale manufacturing
New York	CHIPS investments , advanced materials, and secure microelectronics	Strong state incentives; large-scale semiconductor ecosystem
New Mexico	National labs, secure microelectronics, fusion hardware, quantum, directed energy, and emerging AM ecosystem	Poised to become a premier testbed for advanced manufacturing

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Tennessee and Ohio are the closest analogs to what CAMINO Collaborative aims to build, anchored by national labs or federal institutes. Texas and Arizona dominate in scale manufacturing, megaproject attraction, and semiconductor supply chains. Colorado and Massachusetts excel in R&D-intensive sectors (quantum, aerospace, AI) but lack large-scale manufacturing capacity.

B. U.S. Manufacturing: Reshoring, Robotics, and Supply Chain Resilience

After decades of offshoring, the U.S. has been experiencing a manufacturing renaissance, driven by the convergence of policy and technology. Supply chain disruptions and geopolitical tensions have exposed vulnerabilities in global production networks, prompting companies to reshore operations and invest in domestic capacity.

Robotics and AI are central to this transformation. U.S. companies installed over [44,000 industrial robots in 2023](#), a 12% increase from the previous year, with the automotive sector leading adoption. The integration of AI-powered robotics, digital twins, and modular systems is enabling “lights-out” factories, predictive maintenance, and flexible, self-healing supply chains.

Deloitte’s 2026 Manufacturing Industry Outlook identifies five critical trends: smart manufacturing and operations, digital supply chain tools, policy-driven reshoring, agentic AI, and adaptive workforce planning. The U.S. is expected to triple domestic semiconductor capacity by 2032, with over \$500 billion in private sector commitments and major investments in data centers, clean energy, and advanced packaging.

New Mexico manufacturers report that scaling production without significantly increasing automation is no longer feasible. Rising labor costs, persistent workforce shortages, and global price pressures mean that firms can only remain competitive by accelerating the adoption of robotics and automated production lines.

Jennifer Sinsabaugh, CEO of NM MEP, described how one tile manufacturing facility experienced a 600% increase in capacity through robotic automation. Despite these technological advances, as pointed out by 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 more than 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 national security.

C. Labor Market Demand and Skills Gaps

The U.S. advanced manufacturing sector currently supports over 12.6 million jobs nationally (as of February, 2026) with an average annual salary of nearly \$107,000, including pay and benefits. Manufacturers have the highest percentage of workers eligible for health benefits provided by their employer; In 2025, 95% of manufacturing employees were eligible for health insurance benefits. During late 2025 and early 2026, manufacturing employment in the United States declined, reversing previous trends, but this was primarily due to the compounding effects of heightened tariff-driven cost pressures and significant policy uncertainty.

Looking forward, the Manufacturing Institute and Deloitte projected that the industry will need 3.8 million additional workers by 2033 and that as many as 1.9 million of these jobs could go unfilled if workforce challenges are not addressed. This workforce gap could cost the U.S. economy as much as \$1 trillion in lost output.

According to the National Association of Manufacturers and the ARM Institute’s Future Skills Requirement Report, 77% of employers nationally struggle to fill open roles with qualified talent. Attracting and retaining skilled workers is the top business challenge for the majority of manufacturers. The Southwest region, including New Mexico, is projected to see the fastest growth in advanced manufacturing jobs over the next 10 years.

In New Mexico, workforce emerges as a binding constraint. Despite strong academic institutions, New Mexico is producing fewer STEM graduates than peer states and retaining even fewer. New Mexico colleges graduated over

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2,700 students annually with STEM degrees (2019-2023). However, STEM degrees account for less than 23% of total degrees, ranking 5th among benchmarked states and below the U.S. average. Unlike the national trend and regional comparisons, New Mexico saw an 8% decline in STEM degrees during this period— a worrying trend as other states invest in these programs.

Furthermore, retaining this talent is a challenge: less than half (44%) of graduates from UNM and NMSU stay in-state for their careers, ranking last compared to other benchmark states' largest universities. Many local stakeholders believe most graduate-level STEM talent leaves, unless hired by the national labs. This is a vicious cycle: talent leaves because there are few jobs. When there are jobs there is not enough talent. Advanced manufacturing with the corresponding investments can help reverse this cycle.

New Mexico manufacturers overwhelmingly cited the hiring and retention of skilled workers as the industry's greatest challenge. Companies report persistent shortages of engineers, technicians, and advanced manufacturing

workers, limiting their ability to scale. Business leaders call for coordinated, statewide workforce pathways that integrate community colleges, universities, and testbed sites; expand stackable credentials; and provide hands-on training aligned with real manufacturing environments. Without these pipelines, firms hesitate to expand in-state and the state risks losing ground to more aggressive regions.

Additionally, New Mexico faces one of the highest underemployment rates in the nation. According to the U.S. Bureau of Labor Statistics' U-6 measure, which includes discouraged workers and those working part-time for economic reasons, New Mexico's underemployment rate has ranged between 10–12% in recent years—well above the national average. This translates to approximately 90,000–110,000 underemployed workers statewide.

Targeted training programs in advanced manufacturing, automation, and energy technologies represent one of the most effective pathways for moving these workers into higher-wage, higher-skill roles, especially given that many technician-level jobs can be accessed within 6–18 months of training.

III. Public Benefits of Investing in Advanced Manufacturing

A. Economic Diversification and Upward Mobility

Investment in advanced manufacturing can assist in New Mexico's economic diversification and upward mobility. Manufacturing jobs, especially in advanced technologies, offer better pay and benefits, more consistent hours, and stronger worker protections than the labor market as a whole. In New Mexico, the [average wage for architecture and engineering occupations](#) is nearly \$110,000, and technician roles—critical to advanced manufacturing—earn between \$55,000 and \$75,000 on average, significantly above the statewide median wage of \$45,000 for all occupations.

Manufacturing is among the most economically stimulative sectors in the U.S. economy: [Every dollar of manufacturing output generates \\$2.69 in total economic activity](#), and every direct manufacturing job supports roughly five others, with every dollar of manufacturing wages generating \$4.33 in total labor income. Advanced manufacturing, robotics, and AI will widen those ratios as well as increase productivity.

B. Career Pathways and Workforce Development

Advanced manufacturing (AM) investment creates robust, lifelong career pathways—from entry-level technicians to engineers, managers, and entrepreneurs. Registered apprenticeships, micro-certifications, and industry-aligned curricula provide accessible, stackable credentials that can meet industry needs. These programs are [particularly effective in reaching underrepresented groups](#), including Hispanic, Indigenous, and veteran populations, which comprise a significant share of New Mexico's workforce.

The long-term success of New Mexico's AM ecosystem depends on starting workforce development much earlier—well before students reach college or even high school. [Research shows that STEM identity begins forming in early childhood](#), and stereotypes about “who belongs” in STEM can emerge as early as age six. This early identity formation is critical: students who see themselves as “STEM people” in elementary school are significantly more likely to pursue STEM coursework, credentials, and careers later in life.

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However, national data also show a troubling trend: girls' interest in STEM drops sharply during middle school. This is believed to be driven by reduced confidence, limited exposure to relatable role models, and persistent stereotypes about STEM careers. This decline occurs despite the fact that women are outpacing men in completing bachelor's degrees in the U.S., in every major racial and ethnic group. In 2022, [women earned nearly 60% and men earned over 40% all bachelor's degrees](#). The disconnect between early interest, middle-school attrition, and adult educational attainment **underscores the need for intentional, gender-inclusive STEM pathways that begin early and remain strong through adolescence.**

New Mexico's workforce challenge is compounded by a large population of "disconnected youth"—young people ages 16 to 24 who are neither in school nor employed. According to a 2026 Legislative Finance Committee report, [32,000 young people—13% of the age cohort—are disconnected, a rate 2% higher than the national average](#). The report notes that disconnected youth face higher risks of mental-health challenges, lower educational attainment, and reduced long-term earnings; collectively, this group costs the state \$623 million annually in lost tax revenue. **Critically, 82% of surveyed youth said they would work or attend school if provided adequate support**, underscoring the importance of early, sustained, and wraparound interventions. Disconnection is most acute among Native American youth (29.2%), Black youth (23%), young women with caregiving responsibilities, and students experiencing homelessness or foster-care placement. These realities reinforce the need for career-connected learning models that begin early, remain consistent through adolescence, and provide the guidance, stability, and confidence young people need to stay engaged in education and work.

This is where New Mexico's emerging **K–12 initiatives** are expected to play a transformative role. As the largest school district in the state, Albuquerque Public Schools (APS) sets the tone for statewide education priorities. The new [APS Academies represent a system-wide effort to directly connect K–12 education with the jobs of the future](#)—including advanced economy jobs. By embedding career-connected learning, hands-on technical experiences, and exposure to real industry environments, the Academies help students understand not only what STEM is, but why it matters and how they can belong in it.

A critical component of this effort is educator training and professional development. Research shows that girls' STEM identity is strongly influenced by the adults around them—particularly teachers, who often lack exposure to modern STEM careers. By equipping educators with the knowledge, confidence, and tools to champion STEM pathways, APS and its partners can counteract early stereotype formation, expand students' sense of possibility, and help retain more homegrown talent in New Mexico.

Community colleges are central to closing New Mexico's skills gap. Nationally, the majority of manufacturing workers with post-secondary training receive their training from a community college. Short-cycle credentials in automation, mechatronics, welding, machining, and industrial maintenance have some of the highest placement rates in the country.

The majority of advanced manufacturing jobs do not require a four-year degree. Instead, they are [skilled technical workforce](#) jobs requiring certifications, apprenticeships, or associate degrees. These include robotics technicians, precision machinists, photonics and optics technicians, semiconductor process technicians, quality control specialists, and advanced manufacturing operators. According to [Technician Economy](#), New Mexico has over 8,400 estimated open technician roles annually.

New Mexico's community colleges—including Central New Mexico Community College (CNM), Santa Fe Community College, Doña Ana Community College, and Navajo Technical University—already operate advanced manufacturing, photonics, and energy-technician programs that align directly with the future AM workforce needs. Expanding stackable credentials, registered apprenticeships, and employer-aligned training pathways could significantly improve economic mobility for the state's underemployed population, particularly in rural and tribal communities.

Higher educational attainment is one of the strongest predictors of labor-force participation and economic mobility. In New Mexico, residents with a bachelor's degree or higher have the lowest unemployment rates and the highest likelihood of sustained workforce participation. Strengthening the state's higher-education ecosystem is therefore essential not only for meeting advanced manufacturing workforce needs, but also for expanding long-term economic opportunity.

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The experience of Oak Ridge National Laboratory's Manufacturing Demonstration Facility (ORNL MDF) demonstrates how university partnerships can accelerate regional innovation. At ORNL, the MDF served as the hub of a national academic network anchored by deep collaboration with the University of Tennessee. The Bredesen Center Ph.D. program recruited top doctoral talent whose research was embedded directly in MDF projects, while the Governor's Chairs initiative brought world-class faculty to Tennessee through joint appointments with ORNL—creating a pipeline of students, researchers, and faculty aligned with the lab's mission. MDF then extended this model through a spoke network that included universities such as the University of Maine and the University of Oklahoma, co-funding research, transferring advanced manufacturing capabilities, and helping regional partners build new strengths in composites, materials, and large-scale manufacturing.

The CAMINO Collaborative can build on this proven model while tailoring it to New Mexico's unique assets and mission. Sandia National Laboratories is already receiving interest from universities across the country that want to participate in this effort. Sandia has identified the following opportunities: (1) develop a robust workforce pipeline through internships, graduate placements, and capstone projects; (2) provide advanced training for CAMINO staff in emerging technologies; (3) collaborate on technology exploration tied to national-security R&D; and (4) leverage university partners for surge capacity on specialized tools and research needs.

Within New Mexico, the University of New Mexico (UNM) has identified a number of collaboration opportunities, including:

- CAMINO-aligned capstone projects across engineering and computer science
- Digital-twin design, modeling, and operations challenges
- AR/VR-based training and pre-deployment simulations
- Undergraduate and graduate internships, including summer research placements
- Graduate prototyping labs—virtual and physical—modeled on competitive-access facilities
- Quantum-enhanced AI and advanced computing collaborations with QNM-I and Roadrunner Quantum Labs
- Endowed CAMINO Chairs to anchor long-term research and teaching partnerships

- Graduate and post-doctoral fellowships to develop and deliver CAMINO-aligned curricula
- Joint instrumentation and advanced-tooling proposals that expand shared capabilities

Together, these partnerships could create a seamless talent, research, and innovation pipeline—mirroring and expanding upon the success of the ORNL MDF model.

Yet this strategy also addresses a deeper structural challenge: New Mexico is one of the states most exposed to the coming [higher-education enrollment cliff](#), with a projected 21% decline in college-age students between 2023 and 2041. A shrinking student population threatens university finances, program viability, and the state's long-term talent base—mirroring the pressures that forced dramatic restructuring at institutions such as West Virginia University. By strengthening the value proposition for in-state students, expanding high-quality non-university pathways into advanced-economy jobs, maintaining strong ties with New Mexicans who study out of state, attracting top graduate students from across the country, and building an ecosystem that draws talent from high-growth states, the CAMINO Collaborative can help stabilize and strengthen New Mexico's higher-education institutions. In doing so, it transforms the enrollment cliff from a looming threat into an opportunity to build a more resilient, innovation-driven university system aligned with the state's economic future.

New Mexico has begun to make investments to strengthen this talent pipeline. The state launched a [\\$60 million workforce training initiative focused on high-demand fields](#) (FY2025–FY2027)—including advanced manufacturing, engineering technologies, and skilled trades—providing tuition-free upskilling opportunities for thousands of New Mexicans. To date, \$40 million has been deployed, with the remaining \$20 million scheduled for the final year of the NM GRO pilot.

Participation in statewide workforce programs has increased as a result, with the [Higher Education Department reporting rapid growth in enrollment, credential completion, and employer partnerships](#) across multiple training pathways. These efforts represent meaningful progress, yet the scale of projected demand in advanced manufacturing—particularly for technicians, engineering technologists, and mid-skill operators—far exceeds current capacity. Sustained, coordinated investment will be essential to ensure that New Mexico can meet industry needs,

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expand economic mobility, and fully capture the benefits of its emerging innovation economy.

C. National Security

Advanced manufacturing is critical to our nation's security. The Department of Defense's [National Defense Industrial Strategy](#) emphasizes the need to strengthen the defense industrial base, ensure supply chain resilience, and accelerate the adoption of cutting-edge technologies. AM enables rapid prototyping, on-demand production, and the integration of advanced materials and components, enhancing the agility and self-sufficiency of U.S. armed forces.

Recent national security analysis emphasizes that the United States can no longer rely solely on legacy defense production models to maintain global leadership. As articulated in [Foreign Affairs](#), the emerging contest is defined not just by military platforms, but by the ability to harness advanced manufacturing, AI-enabled design, and rapid iteration cycles at scale. **The nations that can most quickly translate scientific breakthroughs into deployable hardware—through automated production lines, digital engineering, and AI-driven supply chain optimization—will hold the “tech high ground” in the decades ahead.** Advanced manufacturing is a strategic imperative that underpins deterrence, readiness, and technological superiority.

The modern defense industrial base is shifting toward a distributed, software-defined, and data-rich production ecosystem. AI-assisted modeling accelerates materials discovery; digital twins reduce prototyping time from years to months; and automated micro-factories enable small-batch, mission-specific production close to the point of need. This model stands in stark contrast to the slow, centralized, and capacity-constrained systems of the past.

As highlighted in *Foreign Affairs*, the United States must rebuild industrial depth not by recreating the 20th-century arsenal, but by deploying 21st-century production architectures that combine robotics, additive manufacturing, secure microelectronics, and AI-enabled quality assurance.

New Mexico's assets align directly with national priorities. The state's national laboratories already operate at the intersection of AI, high-performance computing, advanced materials, and secure manufacturing—the exact domains identified as critical to U.S. strategic advantage. By expanding advanced manufacturing capacity around these capabilities, New Mexico can help the nation shorten development cycles, strengthen supply chain resilience, and accelerate the deployment of technologies essential to deterrence, from hypersonics and directed energy to secure communications and autonomous systems. Investments in AM in New Mexico therefore serve both statewide economic development and broader national interests.

IV. Inventory of New Mexico's Advanced Manufacturing Ecosystem Assets

A. Sandia National Laboratories Existing Advanced Manufacturing and Materials Capabilities

Sandia National Laboratories anchors New Mexico's advanced manufacturing ecosystem with world-class capabilities in [materials science, additive manufacturing, diagnostics, and engineering](#). Sandia's mission-driven research integrates theory, computation, and experimentation to advance the frontier of materials and manufacturing science, supporting national security, energy, and emerging technology needs.

Sandia's materials science programs provide the foundation for engineering and manufacturing excellence. Researchers develop next-generation materials, predict performance and reliability in extreme environments, and study how energy, mass, and charge transfer can be controlled to enhance

material properties. This work spans electronic and optical materials, thin films and coatings, nanostructured materials, ceramics, catalysts, and advanced alloys—supported by deep expertise in characterization, diagnostics, and high-performance computational modeling.

Additional facilities expand Sandia's AM capabilities:

- The **Advanced Materials Laboratory (AML)** spans the full AM lifecycle – from custom-engineered materials and printable inks to process R&D, prototyping, and testing – with strengths in ceramics, porous materials, catalysts, electronic materials, and printed electronics.
- The **Advanced Manufacturing Processing Lab (AMPL)** provides engineering and prototyping expertise.
- The **Integrated Materials Research Laboratory (IMRL)** and **Materials Science and Engineering Center (MSE)** support atomic- to full-scale materials research.

- The **Mechanical Shock Complex** and **Mechanical Test and Evaluation Facility** enable testing under extreme dynamic conditions.
- The **Microsystems Engineering, Science and Applications (MESA)** complex integrates microelectronics, photonics, and microsystems fabrication in a 400,000-square-foot cleanroom and laboratory environment.
- The **National Solar Thermal Test Facility (NSTTF)** provides the nation’s only large-scale solar thermal testbed.
- The **Quantum Scientific Computing Open User Testbed (QSCOUT)** offers an open platform for quantum computing research.
- The **Distributed Energy Technology Laboratory (DETL)** and **Combustion Research Facility (CRF)** support energy systems integration and combustion science.
- The **Computer Science Research Institute (CSRI)** brings advanced computational science expertise to manufacturing and materials challenges.

The Center for Advanced Manufacturing and Innovation (CAMINO) at Sandia will build advanced manufacturing competencies and mission-grade trust to accelerate product realization for critical missions. This embodies a forward-thinking future engineering approach that integrates AM technologies within a centralized area, fostering collaboration among industry, academia, and federal laboratory partners.

Grounded in national capability gaps, New Mexico’s industrial base, and the research priorities of Sandia National Laboratories (SNL) and Los Alamos National Laboratory (LANL), the campus could focus on: Energy & Clean-Technology Manufacturing, Aerospace Structures & Additive Manufacturing, Microelectronics & Semiconductor Manufacturing, and Defense & National Security Manufacturing. Together, these pillars position New Mexico to lead in dual-use manufacturing, frontier materials, microelectronics, aerospace systems, and clean-energy hardware—areas where national demand is growing and domestic capacity remains limited.

B. Educational Programs and Workforce Development

KEY EDUCATIONAL INSTITUTIONS AND PROGRAMS SUPPORTING AM IN NEW MEXICO (REPRESENTATIVE EXAMPLES)		
INSTITUTION/ PROGRAM	FOCUS AREAS	NOTABLE FEATURES
Central New Mexico Community College (CNM)	CNC machining, manufacturing technology , IT apprenticeships	Largest producer of degrees/certificates in NM; FUSE Makerspace ; NMITAP IT apprenticeships
University of New Mexico (UNM)	Engineering , nanofabrication, prototyping	MTTC Cleanroom, MEP, advanced manufacturing labs
New Mexico State University (NMSU)	Engineering , distributed intelligent AM, cybersecurity	DREAM Research Center : \$7M 2024 EPSCoR E-RISE grant
Santa Fe Community College (SFCC)	Engineering machining technology , CNC	Certificates and associate degrees in machining
Mesilla Valley Economic Development Alliance (MVEDA)	Micro-certifications in AM, automation, aerospace	AutomateUp+ program , industry-aligned, fully funded
Workforce Connection of Central NM	Registered apprenticeships in skilled trades	Employer-driven, paid on-the-job training

New Mexico’s educational ecosystem is anchored by three research universities, an extensive network of community colleges, and specialized training centers. Community colleges are the state’s largest producer of degrees and certificates, with [over 11,000 awards in 2024-2025](#). They offer robust programs in machining, manufacturing, and IT. CNM’s FUSE Makerspace in Albuquerque provides community access to digital fabrication, 3D printing, CNC machining, and rapid prototyping equipment, supporting both workforce development and entrepreneurial activity.

UNM’s Manufacturing Training and Technology Center (MTTC) features a 6,200-square-foot cleanroom, CAD/CAM labs, and extensive semiconductor processing equipment, supporting both education and industry R&D.

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NMSU's DREAM Research Center, funded by a \$7 million NSF EPSCoR grant, is building distributed intelligent additive manufacturing infrastructure across the state, with a focus on cybersecurity, AI, and workforce development.

MVEDA's AutomateUp+ program delivers industry-aligned micro-certifications in AM, automation, and aerospace, fully covering upskilling costs and rapidly scaling to meet employer demand. Registered apprenticeship programs, supported by the Workforce Connection of Central NM and CNM, provide paid, employer-driven training in skilled trades and IT, ensuring a steady pipeline of talent for AM employers.

C. Current New Mexico Manufacturing Industry

New Mexico's manufacturing sector is small in absolute size but is undergoing one of the [fastest growth trajectories in the nation](#), signaling the state's emergence as a new frontier for advanced industry. According to the New Mexico Economic Development Department, the state now ranks **6th in the nation for manufacturing employment growth** and **5th for manufacturing wage growth**, reflecting rapid expansion in high-value production, strong employer demand, and rising competitiveness relative to peer states.

Additionally, New Mexico is one of the most **R&D-intensive manufacturing states in the nation**. The [U.S. Bureau of Economic Analysis](#) reports that **R&D accounts for 6.3% of New Mexico's GDP—the highest share of any state**, driven by the presence of Sandia National Laboratories and Los Alamos National Laboratory. When R&D-related manufacturing is included, New Mexico's industrial profile looks dramatically different: Albuquerque ranks among the top metros nationwide for advanced-industry employment, with a five-times-higher concentration of scientific R&D, semiconductor, and electrical-equipment manufacturing jobs than the national average.

New Mexico's industrial base is anchored by major employers such as Intel (semiconductors), Jabil Inc. (electronics manufacturing), and a growing cluster of aerospace, defense, and advanced materials firms. The Santa Teresa Borderplex—leveraging proximity to Mexico, multimodal logistics infrastructure, and Foreign Trade Zones—is emerging as a strategic node for cross-border manufacturing and supply-chain operations.

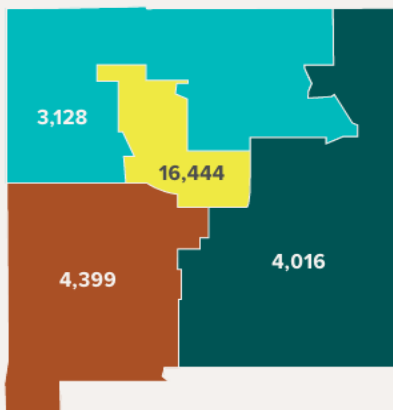
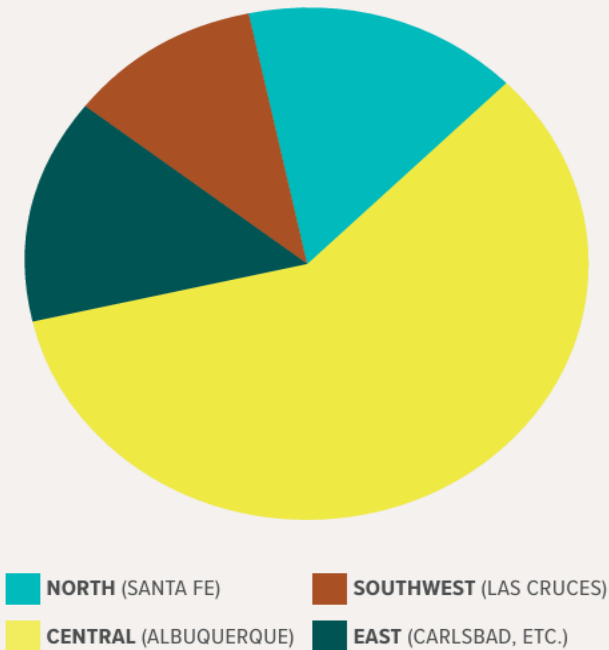
As of February 2026, the National [Association of Manufacturers](#) reports that 1,326 manufacturers operate in the state, employing 33,175 workers, or 4.4% of New Mexico's total workforce. The sector spans a wide range of industries, including food and beverage; wood, paper, and printing; petroleum, coal, and chemicals; primary and fabricated metals; machinery; computer and electronics; electrical equipment and components; transportation; furniture; housing; medical products; and consumer goods.

Taking a deeper look at the [manufacturing-adjacent industries](#) that form New Mexico's broader manufacturing ecosystem reveals a larger and more robust story. In 2025, the state reported 68,505 private-sector jobs in professional, scientific, and technical services, including research and development; 25,178 jobs in transportation and warehousing; and 21,151 jobs in wholesale trade. This concentration of supporting industries provides a strong foundation for continued manufacturing growth while also aligning with the continued evolution of advanced manufacturing. Viewing the sector through this broader ecosystem lens is particularly important in New Mexico, where the state's industrial strengths are closely connected to research institutions, national laboratories, defense contractors, semiconductor development, aerospace, and other advanced-technology activities that may be classified outside traditional manufacturing.

Federal contracting data further illustrates the state's manufacturing environment. An analysis of [USAspending.gov](#) shows that, since FY2021, New Mexico manufacturers received **11,861 federal contract awards** under NAICS code 33. The largest obligations were concentrated in electronic computer manufacturing (\$260.41 million) and guided missile, space vehicle parts, and auxiliary equipment manufacturing (\$106.25 million). Key recipients include firms such as R&M Government Services Inc., KIT PACK Co., MCT Industries Inc., and Raven Defense Corp., underscoring New Mexico's strong foothold in defense, aerospace, and high-tech manufacturing.

MANUFACTURING JOB GROWTH PROJECTIONS 2023–2033

Current statewide projected manufacturing growth over ten years. This number will expand with the CAMINO Collaborative.



SOURCE: NMDWS Employment Projections Program (2023–2033), QCEW Regional Manufacturing Estimates.

D. Human Capital and Demographic Assets

New Mexico’s population of 2.1 million remains one of the most diverse in the nation: nearly half of residents identify as Hispanic or Latino, and 11.4% identify as American Indian or Alaska Native—one of the highest shares nationally. This diversity can provide cultural, linguistic, and experiential assets that enrich the state’s workforce. The state also benefits from a significant veteran community (8.4% of adults) and a higher-than-average share of individuals with disabilities, both of which contribute to a broad labor pool.

However, recent demographic trends underscore the urgency of strengthening New Mexico’s talent pipeline. According to the U.S. Census Bureau, New Mexico was one of only four states to experience population decline in 2025, driven largely by a sharp drop in immigration. [Immigration has been the sole driver of New Mexico’s population growth for the past five years](#), and international migration to the state fell by approximately 73% from July 2024 to July 2025.

“Our natural change is going to continue to be negative, which means the only way to have growth is through migration,” according to Jacqueline Miller, a research scientist at the University of New Mexico’s Geospatial and Populations Studies Center. With deaths outpacing births by nearly 11,500 people between 2020 and 2025, and more than 10,500 residents leaving for other states during the same period, **New Mexico faces a tightening labor market that will increasingly depend on retaining and developing homegrown talent.** Immigrants currently make up just over 10% of New Mexico’s population and nearly 13% of its labor force, including almost a quarter of construction workers and 18% of manufacturing workers (2024).

However, this challenge is not unique to New Mexico. “With immigration now the primary driver of growth in the working-age population, these declines significantly constrain labor supply across industrial sectors. It will take far more than tariffs to rebuild domestic manufacturing. **Meaningful increases in workforce availability—through training, retention, workforce participation strategies, and immigration reforms—are essential before the U.S. can fill today’s job openings, let alone the additional labor required to support large-scale reshoring,**” according to Johan Eideberg, Senior Vice President of [Government & Industry Relations at the Association of Equipment Manufacturers](#).

E. Regulatory, Incentive, and Funding Environment

New Mexico offers a comprehensive suite of incentives for advanced manufacturing investment. In addition to relatively low property taxes and competitive operating costs, New Mexico **does not tax business inventory**, a structural advantage for manufacturers and logistics-intensive firms that carry significant work-in-process and finished goods.

The [state's core incentive tools](#) include:

- **Industrial Revenue Bonds (IRBs)**: Historically one of New Mexico's most powerful cost-reduction tools, offering property tax abatements and exemptions on equipment and construction.
- **Job Training Incentive Program (JTIP)**: A nationally recognized best practice that **reimburses 50–75% of wages** for up to six months for on-the-job or classroom training. It remains one of New Mexico's strongest competitive advantages.
- **High Wage Jobs Tax Credit (HWJTC)**: A refundable **8.5% credit** on wages for up to four years for qualifying high-skill positions—ideal for engineering, technician and advanced manufacturing roles.
- **Manufacturer's Investment Tax Credit (MITC)**: A **5% credit** on qualified equipment and manufacturing property, taken against gross receipts or compensating tax, with a jobs-per-capital-investment requirement.
- **Rural Jobs Tax Credit**: A **6.25% credit** on qualifying wages in rural areas, supporting distributed manufacturing and rural economic development.
- **Local Economic Development Act (LEDA)**: The state's primary discretionary tool, enabling local governments to provide performance-based financial assistance for land, buildings, and infrastructure.

New Mexico also offers unique Sandia National Lab-based programs that directly support technology maturation and commercialization:

[Technology Readiness Gross Receipts \(TRGR\) Initiative](#):

Enabled by the Legislature in 2020, TRGR provides a Technology Readiness Gross Receipts Tax Credit to national laboratories that deliver technology-readiness assistance to

New Mexico businesses that have licensed lab technologies or participate in CRADAs. This initiative allows New Mexico companies to work directly with scientists and engineers at Los Alamos and Sandia to advance patents, software, and inventions through prototyping, proof-of-concept, and technical validation—accelerating commercialization of lab-originated technologies.

[New Mexico Small Business Assistance \(NMSBA\) Program](#):

NMSBA provides New Mexico small businesses facing technical challenges no-cost access to the expertise and capabilities of Los Alamos and Sandia national laboratories. Since 2000, the program has delivered more than \$80 million in technical assistance to over 3,200 businesses, enabling the creation and retention of more than 11,000 jobs across all 33 counties.

New Mexico's incentive platform is competitive but structurally more complex. Analysis from the [Albuquerque Regional Economic Alliance \(AREA\)](#) highlights several structural gaps relative to leading competitor states. States such as Tennessee, Georgia, and Texas offer broad, upfront sales-and-use tax exemptions on equipment and construction, reducing project costs immediately rather than through post-performance credits. Arizona and Texas deploy larger discretionary funds and operate fast approval processes, enabling them to quickly close high-velocity projects. Ohio and Tennessee pair incentives with federally backed manufacturing institutes and megasite programs that provide pre-permitted, infrastructure-ready industrial land. By contrast, New Mexico's gross receipts tax system and limited shovel-ready site inventory introduce friction that competitor states have already addressed through statutory reform and aggressive site-readiness investments.

Recognizing these challenges, New Mexico has begun shifting toward a speed-to-market strategy, aligning with national trends. Manufacturers increasingly prioritize sites that can break ground quickly, often valuing speed more than the size of incentive packages. In response, the state has enacted new legislation (Senate Bills 169 and 170) establishing a Strategic Economic Development Site Advisory Committee and a Site-Readiness Fund to accelerate the development of shovel-ready industrial sites.

Additional Opportunities for New Mexico could include:

- **Mitigate the impact of gross receipts tax (GRT) on manufacturing projects.** New Mexico is one of the only competitor states that taxes services and equipment installation, adding 7–9% to project costs and complicating multi-state cost modeling. Peer states avoid this through broad sales-and-use tax exemptions.
- **Expand upfront, automatic incentives.** Competitor states reduce project costs before construction begins; New Mexico relies heavily on credits and reimbursements that are less attractive for capital-intensive projects.
- **Accelerate permitting and incentive approvals.** Texas, Tennessee, and Georgia routinely close projects in weeks.
- **Increase discretionary funding and site-readiness investment.** Peer states deploy larger deal-closing funds and maintain megasites and pre-permitted industrial parks; New Mexico's shovel-ready inventory remains limited.

Additionally, New Mexico's elevated underemployment rate is shaped not only by limited job opportunities in key regions but also by the structure of the state's safety-net programs, which can create steep “benefits cliffs” when workers increase their hours or wages. When the loss of subsidies for childcare, healthcare, food assistance, or housing outpaces the financial gains from work, individuals may rationally limit their labor-force participation or avoid higher-paying roles.

States with smoother benefit phase-outs—where support tapers gradually rather than ending abruptly—reduce this penalty on work and make it easier for individuals to increase earnings without risking sudden financial instability. Likewise, states with stronger wage ladders—clear, attainable pathways from entry-level jobs into higher-skill, higher-wage roles—give workers a compelling reason to stay in the labor force and advance. Aligning New Mexico's subsidy structures with wage progression, while expanding access to higher-wage technical pathways, would make full-time work more economically viable for many New Mexicans and strengthen the state's overall labor supply.

To address these challenges, New Mexico can take several targeted steps:

- **Map and publish New Mexico's “benefits cliffs” by family type and region.** Commission (or expand) existing [Legislative Finance Committee analysis](#) that shows how total resources (wages + SNAP + Medicaid + childcare + housing + tax credits) change as earnings rise for typical households. Make this public and use it to guide reforms, rather than debating cliffs in the abstract.
- **Smooth phase-outs for key programs instead of hard cutoffs.** Where feasible, replace sharp eligibility thresholds with gradual tapering—especially for SNAP, childcare assistance, and housing supports—so that each additional dollar of earnings still leaves families better off.
- **Align income support with education and training, not just eligibility.** Use existing income support touchpoints (SNAP, Medicaid, TANF) as on-ramps into short, paid training and apprenticeship programs tied to in-demand roles (advanced manufacturing, healthcare tech, construction trades). [The LFC has already flagged the lack of integrated training alongside benefits.](#)
- **Create “no-loss” zones for workers in training or early wage progression.** For workers enrolled in approved upskilling programs or apprenticeships, temporarily protect them from losing key benefits (e.g., childcare, Medicaid) for a defined period or up to a higher income threshold. This makes it rational to move from part-time/low-wage work into higher-wage technical roles without fearing immediate benefit loss.
- **Leverage universal childcare to boost participation and hours worked.** Treat New Mexico's universal/no-cost childcare as a labor-market intervention, not just a family policy. Pair it with targeted outreach to underemployed parents—especially women—and with employer partnerships that offer predictable schedules and advancement pathways so parents can actually increase hours and earnings.
- **Strengthen “wage ladders” in key sectors through structured progression.** Work with employers to define clear, visible wage ladders: entry-level → mid-skill → advanced roles, each tied to specific credentials and pay bands. Then align WIOA, community college programs, and CAMINO Collaborative-style training to those rungs so workers can see—and reach—the next step.

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- **Use state tax credits to reward earnings growth, not just low income.** Continue to expand and refine the Working Families Tax Credit and related tools so that they reward sustained earnings growth and full-time work, rather than dropping off sharply once a household crosses a particular income line. This can partially offset remaining cliffs in federal programs.
- **Pilot regional “benefits + work” navigators embedded in workforce hubs.** Place trained navigators in workforce centers, community colleges, etc. who can help workers understand how taking a raise, promotion, or new job will affect their net resources—and help them sequence benefits, training, and employment to avoid the worst cliffs.

Together, these actions would reduce the financial penalties associated with work, expand access to higher-wage opportunities, and help New Mexico convert underemployed workers into a more stable and productive labor force.

F. Target Companies with Strategic Alignment

The CAMINO Collaborative advanced manufacturing campus can prioritize companies whose technologies, production needs, and R&D priorities align directly with Sandia National Laboratories’ talents in materials science, additive manufacturing, microelectronics, energetics, and national-security engineering. These firms benefit from proximity to Sandia’s world-class facilities and from New Mexico’s growing clusters in aerospace, quantum, advanced energy, and secure microelectronics.

High-priority recruitment targets include:

1. Secure Microelectronics, Microsystems, and Photonics

Companies producing trusted microelectronics, advanced packaging, photonics, and quantum hardware:

- Microchip Technology
- SkyWater Technology
- GlobalFoundries
- L3Harris (optronics, secure communications)
- Infleqtion / ColdQuanta (quantum photonics hardware)

2. Advanced Materials, Additive Manufacturing, and High-Consequence Components

Firms specializing in metal AM, engineered materials, composites, and precision components for extreme environments:

- Velo3D
- EOS North America
- Carpenter Technology
- Hexcel
- Markforged (industrial AM systems)

3. Aerospace, Defense, and Directed Energy

Companies producing aerospace and defense hardware:

- Aerojet Rocketdyne
- Raytheon Missiles & Defense
- Northrop Grumman
- Kratos Defense
- Anduril Industries

4. Advanced Energy, Fusion, and Grid Technologies

Firms developing fusion hardware, power electronics, energy storage, and grid modernization technologies:

- Helion Energy
- Commonwealth Fusion Systems
- Xcimer
- Form Energy
- Fluence
- First Solar suppliers and thin-film materials firms

5. Supply-Chain Partners for Existing New Mexico Anchors

Companies that strengthen the supplier base for Intel, Jabil, AeroVironment, Castelion, Pacific Fusion, and other anchors:

- Precision machining and metal fabrication firms
- PCB and electronics assembly companies
- Specialty coatings and surface-treatment firms
- Automation integrators and robotics suppliers

6. Emerging Dual-Use Technology Firms

Startups and growth-stage companies requiring rapid iteration, secure test environments, and access to national-lab expertise:

- Shield AI
- QuEra
- Ionq
- Venus Aerospace
- Saronic Technologies
- Advanced propulsion and hypersonics startups
- Autonomy, sensing, and defense-tech firms aligned with AFRL and Sandia missions

7. Target U.S. and Global Innovators in Advanced Manufacturing

The CAMINO Collaborative can serve as a national platform for attracting, demonstrating, and deploying next-generation manufacturing capabilities. As advanced manufacturing technologies rapidly evolve—across areas such as AI-enabled design, robotic fabrication, advanced materials, and

digital production systems—there is increasing demand for environments where these capabilities can be integrated, tested, and experienced in real-world contexts.

This campus can provide a structured pathway for leading U.S. and global innovators to establish a presence in New Mexico through pilot deployments, shared-use facilities, and collaborative programs with Sandia and regional partners. A number of companies have expressed interest in expanding into regions that offer this type of integrated infrastructure and access.

By lowering the barriers for companies to prototype, validate, and scale in New Mexico, this initiative can accelerate technology transfer while strengthening New Mexico's position as a leader in the national advanced manufacturing ecosystem. This approach would not only attract high-growth firms, but also deepen supplier networks and create a more dynamic, accessible, and demand-driven manufacturing environment.

V. Benchmarking Successful Regional and International Advanced Manufacturing Models

The examples below highlight approaches that have demonstrated measurable impact in the United States and internationally. Oak Ridge National Laboratory's Manufacturing Demonstration Facility (MDF) is addressed in an up front case study and is therefore not repeated here.

A. Domestic Hubs

1. Upstate NEW YORK: ON-RAMP

Upstate New York has emerged as a national leader in advanced manufacturing through major semiconductor investments and the creation of the [One Network for Regional Advanced Manufacturing Partnerships \(ON-RAMP\)](#), a \$200 million initiative establishing workforce development centers in high-impact locations. ON-RAMP hubs provide industry-aligned training, wraparound support, and direct job placement, with a strong focus on equity and access.

Relevance for New Mexico: Consortium-based training, employer engagement, and comprehensive support services are critical for preparing a diverse workforce for high-skill AM roles.

2. MICHIGAN: Automation Alley and Project DIAMOnD

[Automation Alley's Project DIAMOnD](#) deployed 300 3D printers to small and medium-sized manufacturers, creating one of the largest distributed AM networks in the country. The initiative accelerated digital transformation, strengthened supply chain resilience, and integrated AR/VR training into workforce programs.

Relevance for New Mexico: Distributed manufacturing models can support rural regions and SMEs, complementing efforts such as NMSU's DREAM Center.

3. OHIO: JobsOhio and Semiconductor Manufacturing

[JobsOhio](#) has positioned the state as a hub for advanced manufacturing by attracting major investments from Intel and First Solar and supporting automation, additive manufacturing, and semiconductor supply chains. The model emphasizes industry-academia collaboration, targeted incentives, and infrastructure readiness.

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Relevance for New Mexico: Coordinated state-level economic development and infrastructure preparation are essential for attracting large-scale AM investments.

4. NAVY Additive Manufacturing: NAVSEA Digital Shipyard

[The Navy's Digital Shipyard](#) initiative integrates additive manufacturing into mission-critical production environments, emphasizing qualification, certification, digital engineering, and sustainment. This defense-grade AM ecosystem demonstrates how advanced manufacturing can be embedded into high-reliability workflows with stringent performance requirements.

Relevance for New Mexico: As a national-security manufacturing state, New Mexico can draw lessons from the Navy's approach to qualification, digital thread integration, and mission critical AM applications.

B. International Hubs

1. Basque Country, SPAIN: Digital Innovation Hubs

[The Basque Country's Digital Innovation Hub \(BDIH\)](#) is a connected network offering more than 300 technological assets for SMEs, including training, testing, and validation in additive manufacturing, robotics, cybersecurity, and advanced materials. The model emphasizes accessibility, public-private governance, and continuous upskilling.

Relevance for New Mexico: Networked assets and shared infrastructure can expand access to AM capabilities for smaller firms.

2. DENMARK: Additive Manufacturing Hub

[Denmark's AM Hub](#) focuses on sustainability, workforce development, and green manufacturing. It supports the world's first full-time 3D printing degree program and advances circular manufacturing practices through public-private collaboration.

Relevance for New Mexico: Integrating sustainability and workforce education into AM strategy can strengthen long-term competitiveness.

3. SOUTH KOREA: Ulsan National Institute of Science and Technology (UNIST)

[UNIST's AM Hub](#) leverages AI, digital twins, and smart manufacturing to enhance regional competitiveness. The model emphasizes rapid technology adoption, workforce reskilling, and alignment between government and industry.

Relevance for New Mexico: AI-enabled manufacturing and coordinated policy support are increasingly central to global AM leadership.

4. UNITED KINGDOM: Manufacturing Technology Centre (MTC)

The [UK's MTC](#) is a leading global model for translational manufacturing R&D, workforce development, and SME support. It integrates applied research, apprenticeship training, industry consortia, and large-scale testbed infrastructure within a single campus.

Relevance for New Mexico: The MTC demonstrates how a unified, industry-driven campus can accelerate commercialization, strengthen talent pipelines, and support regional innovation.

COMPARING
ADVANCED MANUFACTURING HUBS

REGION	KEY FEATURES	TRANSFERABLE LESSONS FOR NM
Upstate New York	ON-RAMP workforce hubs, semiconductor cluster	Consortium training, wraparound supports
Michigan	Distributed 3D printing, AR/VR training	Digital transformation, SME engagement
Ohio	JobsOhio, semiconductor and solar manufacturing	Infrastructure readiness, industry-academia alignment
Navy (U.S.)	Digital Shipyard, defense-grade AM	Qualification, digital thread, mission-critical workflows
Basque Country	Digital Innovation Hub, SME focus	Asset networks, public-private governance
Denmark	Sustainability, 3D printing education	Green AM, workforce upskilling
South Korea	AI, digital twins, smart manufacturing	Tech adoption, reskilling, policy alignment
United Kingdom	MTC, translational R&D, apprenticeships	Integrated campus model, commercialization pathways

VI. Technology Trends Shaping AM Adoption

A. Artificial Intelligence, Robotics, and Modular Systems

AI and robotics are transforming manufacturing operations, enabling predictive maintenance, real-time quality control, and autonomous production lines. Modular and self-reconfigurable systems allow for rapid adaptation to changing demand, reducing material waste by up to 90% and supporting flexible, high-mix production.

Physical AI—robots with enhanced autonomy—is rapidly scaling. According to *Deloitte's Tech Trends 2026*, AI-enabled robots are transitioning from niche to mainstream adoption and are becoming increasingly common across manufacturing, warehousing, and supply-chain operations.

B. Additive Manufacturing and Distributed Production

Additive manufacturing (AM) is reaching production scale, with the global market projected to hit \$90 billion by 2032.

AM enables rapid prototyping, on-demand part production, and the creation of complex, lightweight components for aerospace, automotive, and medical applications.

Distributed manufacturing models, such as microfactories and networked 3D printing, reduce lead times, eliminate freight emissions, and enhance supply chain resilience—a key advantage for geographically dispersed regions like New Mexico.

C. Supply Chain Resilience and Reshoring

The COVID-19 pandemic and geopolitical disruptions have underscored the importance of supply chain resilience. U.S. policy is increasingly focused on reshoring critical manufacturing, supported by tariffs, tax incentives, and federal investment in strategic sectors.

AI-driven trade analytics, autonomous agents, and digital supply chain tools are enabling manufacturers to monitor risks, scenario plan, and rebalance networks in real time, further strengthening domestic capacity.

VII. Funding and Financing

Developing the CAMINO Collaborative will require a financing strategy capable of supporting facility construction, site development, and shared-use infrastructure. Successful innovation campuses blend federal, state, local, philanthropic, and private capital, often through multi-entity structures that include nonprofits, public partners, and mission-aligned investors. Because the organizational structure of the CAMINO Collaborative is still under consideration—whether a nonprofit, a for-profit venture studio, or a hybrid model—this section outlines flexible financing pathways that can accommodate multiple governance options.

A. State-Level Financing Mechanisms

New Mexico Finance Authority (NMFA)—Public Project Revolving Fund (PPRF)

NMFA provides low-interest, low-fee financing for capital projects through the PPRF. These loans can support facility construction, specialized equipment acquisition, and site development for public or quasi-public entities—making them well-suited for shared-use innovation centers, training facilities, and manufacturing infrastructure tied to the CAMINO Collaborative.

Statewide Economic Development Finance Act (EDFA)

EDFA authorizes NMFA to finance projects that advance statewide economic development goals, including manufacturing, technology commercialization, and innovation-driven infrastructure. EDFA tools can complement federal or private capital for advanced manufacturing facilities.

B. Local Government Capital Tools

Municipal or County Revenue Bonds

Local governments can issue revenue bonds to finance infrastructure or facility development for advanced manufacturing projects, often in partnership with NMFA or regional economic development organizations.

Local Economic Development Act (LEDA)—Including Grants to Nonprofits

LEDA is New Mexico's primary discretionary economic development tool. While often used for private-sector projects, LEDA can provide grants to qualifying nonprofit organizations for land, building, and infrastructure improvements when the project advances economic development objectives. This creates a potential pathway for

CAMINO Collaborative if organized as a nonprofit or through a nonprofit partner.

C. Strategic Investment Funds

Tierra Adentro Fund (J2) – SIC-Backed Capital

The Tierra Adentro Fund, managed by J2 and backed by the New Mexico State Investment Council (SIC), provides growth-stage capital to New Mexico companies and strategic projects. While primarily an investment vehicle, its mandate to strengthen New Mexico's innovation ecosystem positions it as a potential partner for financing components of the CAMINO Collaborative campus—particularly if structured to support commercialization, venture creation, or shared-use infrastructure.

D. Philanthropic and Corporate Fundraising

The development of an advanced manufacturing campus in New Mexico presents a compelling opportunity for philanthropic and corporate partners committed to workforce development, economic mobility, STEM education, and regional innovation. New Mexico's demographic diversity, persistent opportunity gaps, and national-security ecosystem create a strong case for investment from both in-state and national funders. Philanthropic support can accelerate talent development, expand access to technical training, and ensure that underrepresented communities benefit from the state's emerging advanced manufacturing economy.

A wide range of philanthropic organizations—local, regional, and national—are investing in place-based innovation, advanced manufacturing, climate technology, and workforce development. These funders have supported leading innovation campuses such as Newlab, mHUB, Greentown Labs, Elemental Excelsior, and Tulsa Innovation Labs, and their priorities align closely with the CAMINO Collaborative's mission. Together, they represent a strong pipeline of potential partners for New Mexico's emerging advanced manufacturing ecosystem.

New Mexico–Based Philanthropic Partners

- **Anchorum St. Vincent Foundation** — Focuses on community well-being, economic mobility, and workforce development in northern New Mexico; strong alignment with inclusive talent pipelines.

- **LANL Foundation** — Longstanding supporter of STEM education, teacher training, and rural workforce development across northern New Mexico.
- **McCune Charitable Foundation** — Invests in statewide capacity-building, education, and community economic development.
- **Community Foundations** (Albuquerque, Santa Fe, Taos, Southern NM) — Increasingly active in youth pathways, workforce development, and regional economic opportunity.
- **W.K. Kellogg Foundation** — Significant presence in New Mexico; supports early childhood, family economic security, and workforce pathways.

National Workforce, Education, and Economic Mobility Funders

- **Lumina Foundation** — National leader in postsecondary attainment and workforce innovation, with strong interest in rural and underserved regions.
- **Strada Education Foundation** — Invests in career-connected learning, apprenticeships, and industry-aligned training.
- **Siegel Family Endowment** — Focuses on the future of work, infrastructure, and technology-enabled economic mobility.
- **Ford Foundation** — Supports workforce equity, community development, and inclusive innovation ecosystems.
- **Kresge Foundation** — Funds urban innovation, economic mobility, and place-based ecosystem building.

National Innovation, Climate Tech, and Frontier-Tech Philanthropies

- **MacArthur Foundation** — Major supporter of innovation, manufacturing, and economic mobility initiatives.
- **Walder Foundation** — Climate and innovation funder; key backer of mHUB and Chicago's tech ecosystem.
- **Pritzker Foundation / Pritzker Traubert Foundation** — Invest in economic development, innovation, and manufacturing ecosystems.
- **Rockefeller Foundation** — Global philanthropy supporting climate, mobility, and equitable innovation.

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- **Schmidt Futures** — Funds frontier tech, talent pipelines, and regional innovation hubs.
- **Emerson Collective** — Invests in climate, mobility, and community-anchored innovation.
- **Surdna Foundation** — Supports inclusive economic development and manufacturing pathways.
- **Bloomberg Philanthropies** — Major funder of city-based innovation, mobility, and climate initiatives.
- **Chan Zuckerberg Initiative (CZI)** — Supports science, workforce development, and community innovation.
- **Hewlett, Packard, ClimateWorks, and Energy Foundations** — National climate and energy philanthropies supporting cleantech accelerators, deployment, and innovation ecosystems.
- **Breakthrough Energy Foundation** — Supports hard-tech commercialization and climate innovation.

Corporate Philanthropies & Donations Aligned with Advanced Manufacturing and National Security

- **Intel Foundation** — STEM pathways and semiconductor workforce development.
- **Lockheed Martin Foundation** — Defense workforce and engineering education.
- **Northrop Grumman Foundation** — STEM and aerospace talent pipelines.
- **Raytheon Technologies Foundation** — Engineering and defense workforce development.
- **Honeywell, AeroVironment, Jabil** — Local workforce and community investment tied to advanced manufacturing.

Emerging Funders at the Intersection of AI, Manufacturing, and Workforce Development

Recent national trends show growing philanthropic interest in AI-enabled manufacturing and technical training. A notable example is:

- **Google.org's \$10 million investment** in the Manufacturing Institute to train 40,000 manufacturing workers in AI skills and expand FAME USA apprenticeships to 15 new regions.

This emerging category—including Google.org, the Manufacturing Institute, and the mikeroweWORKS

Foundation—aligns directly with New Mexico's need to prepare workers for AI-rich production environments and advanced manufacturing roles.

Philanthropic capital can accelerate development of training programs, K–12 STEM pathways, educator professional development, startup support, and wraparound services that ensure broad participation in New Mexico's advanced manufacturing economy.

E. How Other States Finance Advanced Manufacturing Campuses

National examples demonstrate how large-scale advanced manufacturing hubs secure capital through a mix of public investment, federal funding, and industry participation.

NEW YORK – State Capital Appropriations + Industry Co-Investment

Upstate New York's ON-RAMP workforce hubs are financed primarily through a \$200 million state capital appropriation to build a network of advanced manufacturing and semiconductor-aligned training centers. This investment is reinforced by industry co-investment, including Micron's planned \$100 billion megafab, which has catalyzed additional workforce and infrastructure spending across the region.

MICHIGAN – County Appropriations + Federal BIL Funding + State Match

Michigan's Automation Alley and Project DIAMOnD were launched through county appropriations totaling roughly \$25 million, with Oakland County funding the first phase and Macomb County funding the second. The initiative later secured \$1.9 million in federal Bipartisan Infrastructure Law funding through the State Manufacturing Leadership Program, along with \$475,000 in matching funds from the Michigan Economic Development Corporation. Private-sector partners contributed software, cloud credits, and technical expertise to accelerate SME adoption of digital manufacturing tools.

OHIO – JobsOhio Liquor-Revenue Model + Industry Megaprojects

Ohio's JobsOhio model is funded through liquor enterprise revenues, generating hundreds of millions of dollars annually for economic development without relying on state appropriations. This structure enabled JobsOhio to deploy large incentive packages and infrastructure investments that helped attract Intel's \$20 billion semiconductor project and First Solar's

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multi-billion-dollar expansions. These industry megaprojects, in turn, have driven additional public-private spending on workforce development, site readiness, and supply-chain capacity.

U.S. NAVY – DoD Modernization Funding + Defense Industrial Base Cost-Share

The Navy's additive manufacturing initiatives, including the NAVSEA Digital Shipyard, are funded through Department of Defense modernization and sustainment appropriations,

which support AM qualification, digital engineering, and shipyard modernization. These efforts are supplemented by industry cost-share from major defense contractors and shipyards, which co-invest in AM equipment, certification processes, and digital-thread integration. Navy AM initiatives routinely involve multi-million-dollar annual investments across the defense industrial base.

VIII. Economic Impact Projections

Estimating the economic impact of a new advanced manufacturing campus requires modeling direct, indirect, and induced effects across multiple time horizons. The analysis below reflects light touch, early-stage projections and is grounded in comparable national facilities addressed in this report.

National models also demonstrate how entire regional economies can diversify. The CAMINO Collaborative presence will catalyze a broader entrepreneurial ecosystem, enabling startups in clean energy, mobility, advanced materials, and hardware-enabled AI to emerge and grow. Construction, architecture, and engineering firms expand to support new facilities; logistics, warehousing, and supply-chain companies grow to move materials and finished products; and small businesses—from machine shops and fabrication studios to software firms, design consultancies, and testing services—scale to meet demand. Creative industries also benefit, with makerspaces, industrial design studios. In short, the campus impact can extend across the entire economy—lifting small businesses, strengthening regional supply chains, and creating new industries that build on New Mexico's culture of creativity, craftsmanship, and innovation.

New Mexico starts with a strong foundation: the Sandia Science & Technology Park (SS&TP) has already generated \$7.7 billion in wages and salaries and \$4.4 billion in economic output, demonstrating both demand and absorptive capacity for a larger, production-grade manufacturing ecosystem. The projections here reflect a conservative baseline aligned with national benchmarks. Yet the Advanced Manufacturing Working Group recognizes that once a fully integrated ecosystem takes shape, this campus has the potential to generate exponential economic impact for Albuquerque and the entire state.

A. Near-Term Impact (Years 1–5): Establishing the Platform

During the construction and early operational phase, economic activity is driven by facility build-out, capital equipment procurement, and initial workforce hiring. Baseline projections, calibrated to ORNL MDF, estimate **800–1,200 construction FTE-years, 250–400 direct facility jobs, \$150–\$250M** in capital equipment procurement, **50–120 industrial partnerships, \$300–\$500M** in induced economic activity, and **5–20 new spinouts**. These impacts reflect a modest trajectory for establishing core capabilities and attracting initial industrial partners.

B. Mid-Term Impact (Years 6–15): Ecosystem Formation

The most transformative economic effects emerge as industrial partners co-locate, supply chains densify, and workforce pipelines mature. Baseline projections anticipate **3–8 major manufacturers, 1,500–5,000 direct manufacturing jobs, 40–80 SMEs** expanding revenue, **\$1–\$2B** in cumulative R&D investment, **\$80–\$150M** in annual tax revenue at maturity, and **\$15–\$40M** in licensing income. These impacts reflect the evolution from a single facility to a functioning industrial ecosystem.

C. Workforce Development Multiplier

One of the most durable long-term impacts of this initiative is its effect on workforce quality, retention, and mobility—areas where New Mexico has historically faced persistent challenges. Although the state's universities graduate thousands of engineers and scientists each year, many leave for opportunities in California, Texas, Colorado, and elsewhere. A high-density advanced manufacturing hub creates the career pathways necessary to **convert brain**

drain into brain gain.

A structured workforce pipeline, modeled on the success of similar facilities, could include graduate research programs, technician apprenticeship and training programs, graduate fellowships and post-doctoral researchers, and active recruitment of STEM talent from tribal colleges and rural

high schools across New Mexico. This integrated workforce strategy strengthens the state's long-term talent base, supports upward mobility for New Mexicans, and ensures a sustainable pipeline of skilled workers for advanced manufacturing employers.

IX. Metrics and Indicators to Measure Advanced Manufacturing Success

Robust metrics are essential for tracking progress and guiding strategy. Key performance indicators (KPIs) include:

- **Production KPIs:** Throughput, cycle time, capacity utilization, production attainment, changeover time, yield rate, and OEE (Overall Equipment Effectiveness).
- **Quality KPIs:** Defect density, first pass yield, customer returns, cost of poor quality, supplier quality index.
- **Workforce KPIs:** Number of degrees/certificates awarded, apprenticeship completions, job placement rates, wage growth
- **Financial KPIs:** Manufacturing cost per unit, operating margin, return on assets, capital investment, tax revenue generated.
- **Innovation KPIs:** Number of patents, R&D expenditures, technology transfer agreements, startup formation.
- **Cluster KPIs:** Number of firms, employment growth, export volume, supply chain localization, infrastructure readiness.

X. Governance and Organizational Models

A. Governance

Effective cluster governance requires collaborative, multi-stakeholder structures that balance agility, accountability, and inclusivity. Best practices from regional and international models include:

- **Consortium-based governance:** Engaging industry, academia, workforce agencies, and community organizations in joint planning, resource allocation, and program delivery (e.g., ON-RAMP, Basque Digital Innovation Hub).
- **Public-private partnerships:** Formal agreements for shared investment, risk, and decision-making in infrastructure, training, and R&D.
- **Network management:** Dedicated cluster management organizations to coordinate activities, facilitate collaboration, and monitor performance.
- **Inclusive stakeholder engagement:** Structured mechanisms for input from underrepresented groups, rural and tribal communities, and small businesses.

Any governance model should emphasize transparency, shared leadership, and continuous learning, drawing on lessons from successful clusters in the U.S. and abroad.

B. Organizational Models

1. Nonprofit Operator (MAGNET / IALR Model)

A single 501(c)(3) operates the campus, programs, labs, and partnerships, with public entities participating through a board or advisory council.

Description

- One nonprofit runs all operations, partnerships, and programming.
- Public agencies engage through governance or advisory structures.

Pluses

- Simple, familiar governance model
- Easy to fund through state, federal, and philanthropic sources
- Fast to stand up with low political risk

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- Strong alignment with workforce development, K–12, and employer services
- Effective for applied research, prototyping, and incremental innovation

Minuses

- Limited ability to support startup formation
- Cannot take equity or manage risk capital
- Less attractive to private investors and corporate co-development partners
- Less competitive for DoD/DOE commercialization programs
- Designed for a workforce-first era, not rapid hardware commercialization

Best Fit

- Regions focused on workforce pipelines and modernizing existing industries

2. Nonprofit Operator + Venture Studio Arm (Hybrid Innovation Campus)

A nonprofit runs the campus and mission programs; a separate but affiliated venture studio drives startup creation, corporate co-development, and commercialization.

Description

- Nonprofit anchors mission, education, and public-sector alignment.
- Venture studio drives commercialization, equity, and startup formation.

Pluses

- Combines public mission with private-sector speed
- Enables equity, startup creation, and commercialization pathways
- Attracts corporate partners and federal innovation funding
- Mirrors leading national models (Newlab, mHUB, Greentown, Elemental)
- Ideal for quantum, energy, aerospace, and defense sectors
- Future-ready structure for hard-tech ecosystems

Minuses

- More complex governance and legal structure
- Requires guardrails to prevent mission drift
- Needs early philanthropic or corporate anchor funding

Best Fit

- Regions aiming to create new industries, not just train for existing ones

3. Public Development Corporation + Nonprofit Operator (JobsOhio-Style)

A public development corporation owns land, manages capital projects, and handles incentives; a nonprofit runs programs and services.

Description

- Public development corporation manages land, capital, and financing.
- Nonprofit operator focuses on mission-driven programming.

Pluses

- Strongest model for land development and multi-phase buildouts
- Can capture land value, issue bonds, and manage major capital projects
- Attractive for private co-investment and long-term sustainability
- Keeps nonprofit focused on mission and programming

Minuses

- Politically harder to create; requires legislative or municipal action
- Slower to stand up
- Does not solve startup/commercialization gaps on its own
- Still requires a venture-creation mechanism layered on top

Best Fit

- Regions building large innovation districts or multi-building campuses with complex financing

XI. Preliminary Timeline

The Advanced Manufacturing Working Group will work closely with all public-private entities to ensure this campus is built as soon as possible. This timeline is a high-level early estimate, recognizing the numerous dependencies with projects of this size. A more detailed, milestone-based timeline will be produced in Phase 2 of this initiative.

A. YEAR 1 — PLAN

Develop temporary site for immediate AM workforce training needs, obtain site approvals, financing strategy, and private sponsors and tenants

To meet immediate workforce needs in light of recent industry expansion, partner with CNM to stand up temporary advanced manufacturing training capacity while the permanent campus is under development. CNM will facilitate coordination and recent workforce legislative funding with community colleges statewide.

Take a national tour of other manufacturing and innovation sites with key state leaders to inform the campus design. Finalize the organizational structure, site/ land selection, and financing to support design and construction. Embed industry-first mindset into planning and begin outreach to targeted campus tenets. Establish branding/ communication strategy and announce the initiative. Continue to engage leaders in the state to align with broader economic development and workforce priorities.

B. YEAR 2 — DESIGN

Development design, permitting and plan for collocation of Sandia National Labs + key campus partners

Design the campus with key stakeholders, including industry, education & academia, and other government partners. This phase integrates Sandia and other tenant technical requirements such as vibration-controlled environments,

H-occupancy AM suites, secure research zones, and specialized infrastructure, with other campus tenet requirements. We expect interest from other government entities to collocate to the campus, as well.

Define shared-use models, access protocols, and the specific research, prototyping, and workforce functions the campus will support. Continue needed permitting and engineering work.

C. YEAR 3 — BUILD

Construction and Fit-Out

Construction of the initial 200,000+ square-foot building(s) and campus, which may include specialized labs, high-bay spaces, and workforce training environments. Commission and install specialized equipment (CNC, AM systems, robotics, metrology, clean energy hardware, AI integration, and digital manufacturing infrastructure) in parallel with final building completion.

Workforce programming, apprenticeships, and early industry partnerships can prepare to ramp up during this phase. Incorporate tenets as part of broader campus ecosystem. Explore additional campus needs which may include housing/ hotel nearby for travelling and extended stay visitors and students, dining and other art and cultural amenities.

D. YEAR 4 — LAUNCH

Operations and Program Launch

The campus launches and begins to operate workforce training programs, industry-embedded labs, and early-stage prototyping spaces. Full operational capacity—including Sandia-aligned research suites, innovation hubs, and small-batch production environments scale as equipment is commissioned and partnerships mature.

In Summary

New Mexico stands at a pivotal moment: global shifts in supply chains, national-security priorities, and advanced technologies are converging with the state's unique scientific assets to create an unprecedented opportunity for advanced manufacturing. As AI, robotics, quantum systems, advanced materials, and digital production collapse the distance between research and deployment, regions capable of linking discovery to manufacturing are emerging as national leaders. New Mexico has the ingredients to join them — but not yet the infrastructure.

For decades, the state's economy has been shaped by federal spending and extractive industries, leaving it vulnerable to budget cycles and commodity volatility. Recent gains in household income and targeted legislative investments signal progress, but long-term resilience requires a broader industrial base. Advanced manufacturing offers that pathway. It is the connective tissue across New Mexico's priority growth sectors — quantum technologies, aerospace and defense, advanced energy — and the missing link between world-class research and scalable commercial production.

New Mexico's competitive advantages are distinctive: unmatched national-security R&D density, diverse test environments, low energy costs, strategic logistics positioning, and a growing capital strategy through the State Investment Council's \$1.9 billion venture program. Yet without coordinated manufacturing infrastructure, these strengths remain underleveraged. Building an advanced manufacturing ecosystem — one that integrates AI, robotics, secure microelectronics, advanced materials, and rapid prototyping — is essential for translating scientific breakthroughs into deployable technologies, strengthening national resilience, and creating high-wage, future-ready jobs for New Mexicans.

This needs assessment makes clear: New Mexico has the assets, momentum, and strategic alignment to become a premier testbed and production hub for next-generation technologies. What it lacks is the connective infrastructure — shared facilities, stronger commercialization pathways, and coordinated partnerships — that allow research-rich regions to become manufacturing-rich economies. The CAMINO Collaborative is designed to fill that gap.



Hard hat tour of the Center for Advanced Manufacturing and Innovation (CAMINO). Led by Sandia National Laboratories project lead Erica Douglas, the site visit provided commercial real estate professionals and industry visitors an insider's look at the innovative facility under construction in Albuquerque, New Mexico.

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CASE STUDY #2

BUILDING AN INNOVATION CULTURE AROUND SPEED, EXPLORATION, AND PRIVATE- SECTOR MOMENTUM

Insight for New Mexico: How to create an entrepreneurial hot spot

Austin's rise as a hard-tech hub began with a culture: a belief that if the system you need doesn't exist, you build it yourself. That ethos has shaped everything from the city's startup scene to its advanced manufacturing footprint, and nowhere is that spirit more visible than in Lockhart, Texas, where a 1,200-acre experiment called Proto-Town is redefining what a manufacturing and innovation community can look like.

Proto-Town began as an idea among three young founders who wanted to create a place where robotics engineers, energy innovators, and defense-tech builders could live, work, and test their technologies without friction. As the Wall Street Journal reported, the site functions as a "business commune for young tech founders," where people live together in the house or nearby trailer parks or camps and work on their companies from morning to night. The founders launched the project in 2024 with less than six figures of capital; by early 2026, it had been valued at **\$100 million** following its first fundraising round.

Proto-Town has scale — more than a thousand acres, but also a **build-anything mindset**. Startups arrive, test their technologies, and often stay. Some lease large tracts of land

for drone testing or autonomous machinery. Others pay only room and board while they prototype. **The environment is intentionally fast and unconventional.** As one founder said, Caldwell County is "very willing to play

ball," creating a regulatory environment where experimentation is both allowed and encouraged.

A Place Where Culture, Talent, and Hard Tech Converge

Walk through Proto-Town and you see robotics teams test autonomous excavators on 40-acre plots and energy startups running centrifuges in open-air test bays. A nuclear-tech company recently announced plans to build a test reactor on site. **It is part research campus, part frontier town, and part venture studio — a place where the boundaries between work and life blur by design.**

This culture reflects the broader momentum of the Austin region, where advanced manufacturing has accelerated dramatically over the past decade. Samsung's multibillion-dollar semiconductor facility northeast of the city, Tesla's Giga Texas plant, and a growing constellation of aerospace, robotics, and AI-hardware companies have turned the region into one of the country's most active hard-tech corridors. **The University of Texas at Austin fuels this momentum with one of the nation's most prolific commercialization engines, spinning out dozens of startups each year and generating hundreds of invention disclosures.**

Proto-Town is the extreme expression of this ecosystem — a place where founders can test, iterate, and scale without waiting for permits, approvals, or institutional gatekeepers. It is a physical manifestation of Austin's innovation identity: fast, improvisational, and deeply entrepreneurial.



Terran co-founder Daniel Weddle moved from Indiana to Proto-Town, where his company is building adobe houses. Photo © Brenda Bazán for WSJ

CASE STUDY #3

WHAT HAPPENS WHEN A REGION DESIGNS ITS MANUFACTURING FUTURE AROUND PEOPLE, NOT JUST TECHNOLOGY

Insight for New Mexico: Community-centered workforce development

MAGNET, the Manufacturing Advocacy and Growth Network, rebuilt the region's manufacturing identity by putting people, neighborhoods, and small manufacturers at the center of its strategy. In 2022, MAGNET opened a new **53,000+ square-foot Manufacturing Innovation, Technology & Job Center** in Cleveland's Hough neighborhood. The building is a former public school transformed into a public-facing hub where students, job seekers, entrepreneurs, and manufacturers walk through the same doors every day.

Funded through \$18M in philanthropic investment, including more than 100 donors and New Markets Tax Credits, MAGNET's headquarters is intentionally smaller than a national lab or federal demonstration facility, but its impact is outsized. MAGNET's mission is bold: help Northeast Ohio create **30,000 new manufacturing jobs** and generate **\$40 billion in economic impact** by 2032.

A Place Where Workforce, Industry, and Community Meet

Walk through MAGNET's building and you immediately understand its philosophy. This is not a closed-door research center. It is a community-anchored manufacturing ecosystem, designed to be visible and accessible.

Inside, MAGNET integrates:

- A **20,000 sq. ft. prototyping and Industry 4.0 lab**, where small and mid-sized manufacturers test new technologies, automate processes, and build prototypes.
- A **job concierge** that connects residents — including unemployed and underemployed adults — to training, wraparound supports, and direct job placement.
- A **6,900 sq. ft. learning wing** that brings **3,000+ K-12 students** through the building each year for hands-on STEM experiences.
- A **STEM playground** co-designed with the Great Lakes Science Center and Cleveland Metroparks, making manufacturing feel fun, tangible, and future-oriented.
- Co-located partners including Women in Manufacturing, Cleveland Water Alliance, and NEOSTEM, creating a multi-organization talent engine under one roof.

MAGNET developed several displays with help from the Great Lakes Science Center. Photo © Bob Perkoski



Workforce System That Actually Works for Workers

MAGNET's impact is not measured only in prototypes or training hours. It is measured in economic mobility.

Their programs have helped launch thousands of manufacturing careers, many for residents who previously faced barriers to employment. A partnership with Cuyahoga County and local employers have created pathways for returning citizens, single parents, and adults seeking career transitions. And their K–12 programming is reshaping how young people see manufacturing as a high-tech, high-opportunity field.

MAGNET shows what happens when a region builds a manufacturing hub that is not just in the community, but of the community.

"MANUFACTURERS NEED TO AGREE ON THE CORE SKILLS THEY NEED, SHARE HOW MANY PEOPLE THEY EXPECT TO HIRE AND COMMIT TO PAID EXPERIENCE AND JOBS. SCHOOLS AND COMMUNITY COLLEGES CAN THEN BUILD TRAINING AROUND REAL DEMAND. WORKFORCE AND COMMUNITY PARTNERS CAN HELP PEOPLE ENTER THE PROGRAM AND FINISH IT.

A FACTORY TOUR CAN CREATE INTEREST. IT CANNOT CREATE A TECHNICIAN. THAT TAKES A CONNECTED PATH FROM THE CLASSROOM TO PAID EXPERIENCE TO A REAL JOB.

WHEN EMPLOYERS, EDUCATORS AND COMMUNITY PARTNERS CREATE THAT PATH TOGETHER, SMALL MANUFACTURERS CAN BUILD A TALENT PIPELINE NONE OF THEM COULD ACHIEVE ALONE."

—Ethan Karp, "Who Will Run The Factory of The Future?", Forbes.com

MAGNET's STEM themed playground includes a mural depicting leaders in manufacturing, engineering and entrepreneurship. Photo © Cleveland.com



Facility and Workforce Training Design

Building a next-generation advanced manufacturing ecosystem also requires a thoughtfully-built campus that encourages innovation, a coherent program architecture, and a shared operational model that can translate New Mexico's scientific and industrial assets into community and economic vibrancy.

This section provides that deeper dive. It moves from the “why” established in the Strategic Rationale to the “how” — how the CAMINO Collaborative might be designed, equipped, programmed, and activated to meet the needs

of industry, national laboratories, educators, and the state's emerging technology sectors. This is not a final roadmap, but an informed starting point. These preliminary design considerations are intended to guide decision-making and encourage discussions among community partners. As the initiative advances, these ideas will evolve further. Several organizations on the Advanced Manufacturing Working Group are currently exploring co-location on this new campus.

I. Facility Requirements: Space, Equipment, and Learning Environments

The CAMINO Collaborative can be designed as a next-generation learning and innovation environment that integrates education, workforce development, applied research, and industry collaboration in one location. Its design draws inspiration from national examples like [MAGNET's Manufacturing Innovation, Technology & Job Center](#) in Cleveland, and the [Institute for Advanced Learning and Research \(IALR\)](#) in Virginia, both of which have a strong workforce training component.

A. Start with a Design Charrette

The development of the CAMINO Collaborative's facilities and campus blueprint begins with a multi-day design charrette—a structured, action-oriented planning process that convenes industry partners, national laboratory experts, educators, workforce partners, and community stakeholders to co-design the core elements of the campus. This charrette is the primary mechanism for aligning the facility's spatial design, equipment needs, and instructional environments.

The charrette will be organized around a series of focused working sessions that bring together the people who will use, operate, and depend on the facilities. Industry partners play a central role, helping define production-relevant workflows, prototype-to-production capabilities, equipment specifications, and the types of controlled-access zones required to protect proprietary processes and export-controlled work. Educational partners—including APS

Academies, CNM, UNM and other participating universities—shape the design of learning environments, ensuring that classrooms, labs, and training cells support modern pedagogy, stackable credentials, and seamless pathways from K–12 through university.

Across several days, participants work through key questions:

- How should high-bay and low-bay spaces be configured to support both instruction and applied R&D?
- What equipment, utilities, and safety systems are required for advanced manufacturing at scale?
- Where should transparent sightlines invite public engagement, and where must controlled-access zones protect intellectual property?
- How can the facility support rapid prototyping, iterative testing, and small-batch production for industry partners?
- What spatial adjacencies best support interdisciplinary collaboration among students, technicians, engineers, and researchers?

The charrette emphasizes rapid ideation, refinement, and cross-sector problem solving, producing a set of preliminary design concepts that reflect shared priorities and operational realities. It also clarifies the sequencing of decisions—what must be determined early to guide architectural design, what can evolve over time, and where further benchmarking or technical validation is required.

B. Space Needs and Equipment

1. Flexible, Modular Classrooms and Labs

Modern technical education requires spaces that can rapidly adapt to evolving technologies and instructional modes. The CAMINO Collaborative can incorporate modular classrooms, reconfigurable labs, and transparent sightlines that connect learning spaces to applied manufacturing environments.

[MAGNET's recent \\$13 million redesigned facility](#) demonstrates the value of open-floor, glass-fronted labs that allow students, families, and employers to see advanced manufacturing in action, helping demystify the field and strengthen community engagement. The building is over 50,000 square feet and includes a 20,000 square foot prototyping lab for manufacturing and start-ups and a nearly 7,000 square foot learning wing for K-12 student education. The space is immersed with art and includes a STEM themed playground.

The CAMINO Collaborative facility must balance transparency with the protection of intellectual property and proprietary processes. Public-facing visibility will be reserved for non-sensitive, non-proprietary activities, while controlled-access zones will support work involving export-controlled technologies, proprietary designs, or industry-specific confidentiality and lab safety requirements.

Key features may include:

- Movable partitions and mobile equipment to support rapid reconfiguration
- Shared instructional suites for CNM, UNM and other universities, and APS Academies
- Direct adjacency between classrooms and applied labs to reinforce experiential learning
- Utility grids (power, compressed air, data) designed for plug-and-play flexibility
- Controlled-access areas for proprietary or sensitive manufacturing processes

2. Specialized Technical Laboratories

The CAMINO Collaborative can incorporate specialized labs aligned with New Mexico's comparative advantages and Sandia's technical priorities. These include:

- Precision machining and CNC labs

- Additive manufacturing suites with H3 occupancy, Argon shielding, and UPS systems
- Robotics and automation labs for PLCs, industrial robots, and autonomous systems
- Composites and materials science labs
- Clean energy systems labs for PV, wind, storage, and microgrid integration
- Quantum and photonics demonstration labs with vibration isolation and environmental controls

These labs mirror the high-bay and low-bay configurations outlined by Sandia—supporting large-scale equipment, overhead cranes, reinforced floor loading, and advanced ventilation systems—while enabling both instructional use and applied R&D.

3. Simulation and Virtual Reality Suites

Simulation environments support advanced training in:

- Digital twins and manufacturing system modeling
- Robotics and automation
- Safety and systems integration
- Aerospace and defense manufacturing scenarios

These suites reduce equipment downtime, improve safety, and accelerate learning for both students and incumbent workers.

4. Collaboration and Co-Working Spaces

To foster interdisciplinary problem-solving, the facility may include:

- Team rooms and project studios
- Shared lounges and informal collaboration zones
- Embedded faculty, industry, and national lab offices
- A 250–300-person configurable conference center for convenings, workshops, and demonstrations

C. Specialized Equipment

The CAMINO Collaborative requires industry-grade equipment that reflects the needs of New Mexico's priority sectors. Core equipment categories may include:

- CNC machining centers, lathes, and mills
- Metal and polymer additive manufacturing systems (powder-bed fusion, DED, composites)

III. TRAINING DESIGN

- Industrial robotics and automation platforms
- Composites fabrication equipment (autoclaves, curing ovens, testing rigs)
- Clean energy hardware (PV arrays, wind components, battery storage, microgrid systems)
- Metrology and quality systems (SEM, CMMs, laser scanners, NDE tools)

- High-performance computing clusters for modeling, simulation, and digital manufacturing

Shared-use models ensure that CNM, UNM, APS Academies, and industry partners can access equipment without duplicating capital expenditures.

II. Applied Learning and Work-Based Training Environments

A. On-Campus Training Cells

Training cells replicate real manufacturing environments, enabling students to practice tasks under industry-like conditions. These include:

- Robotics and automation lines
- Precision machining bays
- Additive manufacturing production cells
- Assembly and testing stations

These environments support stackable credentials, apprenticeships, and rapid upskilling programs.

B. Industry-Embedded Labs

Co-locating labs with industry partners—an approach modeled after ORNL MDF and MAGNET’s embedded-industry design—creates:

- Direct pathways to apprenticeships and employment
- Joint R&D opportunities
- Shared curricula aligned with employer needs

This model strengthens the regional talent pipeline and accelerates technology adoption.

C. Mobile Training Units

Mobile labs extend the CAMINO Collaborative’s reach to rural and tribal communities, employer sites, and underserved neighborhoods. The [Institute for Advanced Learning and Research \(IALR\) GO-TEC](#) provides a strong national model, offering integrated machining programs, advanced manufacturing training, and teacher certification within a flexible, industry aligned facility. The [NM MEP](#) has a mobile unit for extending reach.

III. Innovation Hubs, Incubators, and Technology Transfer Spaces

Innovation hubs and incubators are essential for bridging research, workforce development, and commercialization. The design may include:

- Startup incubation and acceleration spaces
- Prototype development and small-batch manufacturing labs

- Technology-transfer suites supporting Sandia, AFRL, and university partnerships
- Access to venture capital, entrepreneurial coaching, and commercialization support

IV. Artist Engagement and Creative Integration

New Mexico’s artistic heritage offers a distinctive advantage for inspiring and cultivating the next generation of innovators. Selective integration of artistic and creative practices can strengthen STEAM identity formation, enhance spatial and systems thinking, and deepen community connection to the initiative. This approach aligns with research showing that early exposure to immersive, hands-on creative environments

[increases interest in STEM fields, particularly among students from underrepresented backgrounds.](#)

A. Creativity to Drive Innovation

Advanced manufacturing increasingly relies on design fluency, human-machine interaction, and rapid prototyping,

areas where artistic thinking and engineering practice can intersect. Artists and designers bring strengths in visualization, material exploration, and experimentation that complement the precision and analytical rigor of engineering. Integrating these perspectives can strengthen things like human-centered design and aesthetic and functional integration. This is about expanding the cognitive toolkit and creating a culture of innovation available to engineers, technicians, and researchers.

B. Immersive Experiences that Spark Early STEAM Interest

For K–12 learners, immersive artistic experiences can demystify complex technologies and make the facility feel welcoming rather than intimidating. This might include:

- **Interactive installations** that visualize manufacturing processes, materials behavior, or quantum phenomena
- **Large-scale murals or sculptural elements** that depict the intersection of science, engineering, and cultural identity
- **Hands-on maker experiences** that blend craft traditions with digital fabrication, reinforcing continuity between New Mexico’s creative past and its technological future

These elements help young learners see themselves in the space, strengthening early STEAM identity and broadening participation in advanced manufacturing pathways.

C. Artist–Engineer Collaborations

Artist–engineer collaborations could play a powerful role in strengthening the CAMINO Collaborative’s innovation ecosystem. Artists bring complementary capabilities that enhance both the technical and communicative dimensions of product development. Their fluency in visualization, material exploration, and human-centered design can improve usability and clarity. Artists also excel at making complex systems legible, helping interdisciplinary teams align around shared mental models.

Artists also contribute to the exploratory phase of innovation. Their comfort with ambiguity and iterative experimentation supports the discovery of new materials, forms, and approaches.

This creative mindset can unlock novel pathways and encourage alternative ways of seeing and framing problems.

Importantly, artists also strengthen a dimension of innovation that is frequently overlooked in technical environments: storytelling. Many startups—and even mature technology companies—struggle to communicate their value proposition to investors, customers, and partners. Artists, designers, marketers, communicators, and creative technologists can help translate complex technologies into compelling narratives, imagery, and visual identities that resonate with key audiences and customers. This includes everything from product visualization and brand development to interpretive graphics, user-facing materials, and immersive demonstrations that help stakeholders understand the significance of new technologies. These skills support and accelerate commercialization and market adoption.

These collaborations can be formalized through short residencies, project-based engagements, or co-located studio-lab spaces that encourage cross-pollination without diluting the technical mission.

D. Community Connection and Civic Identity

This initiative is envisioned as a civic anchor as much as a technical hub. Thoughtful artistic integration can:

- Make the facility feel accessible to families and community members
- Reinforce New Mexico’s identity and reputation as a place where imagination and technical mastery coexist and innovate
- Support public understanding of advanced manufacturing and national security work
- Create a sense of belonging for students who may not initially see themselves in STEM fields

This strengthens the long-term talent pipeline by building trust, familiarity, and aspiration across diverse communities.

V. Apprenticeships and Work-Based Learning

Registered apprenticeships and other work-based learning models are proven strategies for developing a skilled workforce in advanced manufacturing and related sectors. These programs combine paid, on-the-job training with classroom instruction, leading to industry-recognized, portable credentials. Apprenticeships address critical workforce gaps, support national security priorities, and provide pathways to high-wage, high-demand careers.

The [Metallurgical Engineering Trades Apprenticeship & Learning \(METAL\)](#) initiative and the [National Advanced Manufacturing Apprenticeship Project \(NAMAP\)](#) demonstrate the impact of apprenticeships in strengthening the defense and industrial workforce, supporting the security and sustainability of the U.S. manufacturing base. These programs can be developed in partnership with major employers, community colleges, and national labs, and designed to be scalable and inclusive.

International models also offer valuable insight for New Mexico's apprenticeship strategy. [Germany's dual apprenticeship system](#) is widely recognized as one of the most effective workforce development models in the world, combining classroom instruction with paid, hands-on training that is tightly aligned with industry needs. This approach has helped Germany maintain **one of the lowest youth unemployment rates globally and avoid the severe skills shortages seen in other advanced economies**. The model's

strength lies in its authentic employer engagement, clear occupational standards, and the seamless transition it creates from training to full-time employment. Many apprentices are hired directly by the firms that trained them. While New Mexico's context differs, the core principles of the German system: strong employer partnerships, early career exposure, and integrated work-and-learn pathways reinforce the importance of expanding high-quality apprenticeships.

Community colleges will play a central role in activating the CAMINO Collaborative, serving as providers of technical instruction, short-cycle credentials, and applied learning aligned with industry needs. Institutions such as CNM, Santa Fe Community College, Doña Ana Community College, and Navajo Technical University already operate advanced manufacturing, photonics, automation, and energy-technician programs that map directly onto AM training pathways. Their involvement ensures that the facility can deliver rapid upskilling, registered apprenticeships, and stackable credentials that meet employer demand from day one.

Universities contribute in complementary ways, particularly through advanced degree pathways, applied research, and technology transfer. Collaboration with UNM and other four-year institutions will strengthen the region's engineering talent pipeline and support translational research that connects laboratory innovation to commercial and defense manufacturing needs.

VI. Integration with Sandia National Laboratories, Industry Apprenticeships, and National Security Manufacturing Priorities

A. Sandia National Laboratories Workforce Development Initiatives

Sandia National Laboratories initiatives include:

- **[Quantum Learning Lab and Technician Bootcamp](#):** Immersive training programs preparing students for high-tech manufacturing roles in quantum and semiconductor industries.
- **[Sandia University Partnerships Network \(SUPN\)](#):** Collaborative research and talent pipeline development with universities nationwide.
- **Technology Commercialization and Startup Support:** Programs such as the Boost Startup Studio facilitate the

transfer of lab-developed technologies to market, with a focus on underserved communities and clean energy solutions.

- **Industry Partnerships and Apprenticeships:** Sandia collaborates with industry partners to develop and validate new technologies, support workforce training, and address supply chain resilience and national security needs.

B. Alignment with National Security Manufacturing Priorities

The Department of Defense (DoD) and its agencies have articulated clear priorities for integrating advanced manufacturing, additive manufacturing, and workforce

development to support national security objectives. Key strategies include:

- **Integration of Additive Manufacturing:**
DoD policy (DoDI 5000.93) emphasizes the education, training, and certification of the workforce in AM, collaboration with industry and academia, and the development of common standards and metrics.
- **Manufacturing Readiness and Risk Management:**
Implementation of best practices such as SAE AS6500 and MIL-HDBK-896A ensures that manufacturing processes are proven, workforce needs are assessed, and facilities are equipped to support both production and maintenance, repair, and overhaul (MRO) activities.
- **Competency-Based Occupational Frameworks:**
The U.S. Department of Labor and its partners such as the Urban Institute have developed national frameworks for occupations such as additive manufacturing technician, mechatronics technician, and precision machinist, supporting the development of high-quality, competency-based apprenticeship programs.

C. Recommendations for Integration

Consider the following:

1. Formalize Partnerships with Sandia and Other Federal Labs

- Establish joint curriculum development to align academic programs with federal labs research themes and national priorities.
- Create faculty exchange programs to promote deeper research collaboration.
- Develop structured internship programs to provide hands-on experience in cutting edge research and technology development.

2. Establish strategic partnerships with industry

- This includes collocation of staff, in-kind consignment of state-of-the-art equipment, access to state-of-the-art computing, material synthesis and characterization.
- Industry sees the Collaborative as a showcase for their latest technologies and a proving ground for its utilization.

3. Align Apprenticeship and Work-Based Learning Programs

- Develop registered apprenticeships in precision manufacturing, aerospace, and advanced materials, with input from federal labs and industry partners.
- Integrate federal lab competency frameworks and best practices into program design and assessment.

4. Embed Technology Transfer and Innovation in Facility Design

- Create innovation hubs and incubators that support commercialization of lab-developed technologies, entrepreneurship, and small business development.
- Facilitate access to prototyping, testing, and scale-up resources for startups and industry partners.

5. Implement Robust Metrics and Outcomes Tracking

- Adopt balanced scorecard and data-sharing approaches to monitor program effectiveness, employment outcomes, and equity impacts.
- Disaggregate data by race, ethnicity, gender, and geography to ensure inclusive pathways and continuous improvement.

6. Prioritize Inclusive Pathways

- Design programs and facilities to be accessible to underrepresented and marginalized populations, including rural, Indigenous, and low-income communities.
- Provide wraparound support, career counseling, and targeted outreach to ensure broad participation and success.

VII. National and Global Training Examples

A. National

- **MassBridge (Massachusetts):** Developed a scalable approach to standardize student outcomes in advanced manufacturing across community colleges, with

embedded performance assessments and strong industry partnerships.

- **SUNY Community Colleges (New York):** Offer stackable credentials, flexible pathways, and industry-aligned

training in robotics, automation, and mechatronics, supported by public and private investment.

- **Institute for Advanced Learning and Research (Virginia)**: Provides accelerated defense manufacturing training, integrated machining technology, and teacher certification in partnership with community colleges and industry.
- **Goodskills Career Builder (Buffalo, NY)**: Delivers targeted skills training, job placement, and wraparound supports, resulting in high completion and employment rates.

• B. Global

- **BKaL 360 (Germany)**: Integrates primary and secondary education, apprenticeships, and university pathways, with strong industry engagement and parental involvement.
- **MCAST (Malta)**: Offers entrepreneurship training across all faculties, with business incubators and innovation hubs supporting student startups and technology transfer.
- **SZPT (China)**: Provides dedicated facilities for entrepreneurship, collaborative platforms with global companies, and open-source tools for learners.
- **OMNIA (Finland)**: Operates a skills center for migrants, integrating them into the labor market through targeted training and support.

VII. Program Framework: Training Pathways and Stackable Credentials

A. The Rationale for Stackable Credentials and Flexible Pathways

Stackable credentials enable learners to accumulate industry-recognized qualifications over time and progress along clearly defined career pathways. This approach addresses the needs of a diverse student population, including working adults, recent high school graduates, and those seeking to upskill or reskill in response to technological change. Stackable credentials provide multiple entry and exit points, allowing students to earn short-term certificates, industry certifications, and degrees in a modular, flexible manner. This model is particularly effective in high-demand sectors such as advanced manufacturing, aerospace, and clean energy, where rapid technological evolution necessitates continuous learning and adaptation.

Research demonstrates that stackable credential pathways increase credential attainment, support economic mobility. These credentials are associated with higher retention rates, increased completion of higher-level qualifications, and measurable wage gains.

B. Program Structure from K–12 to University

A robust program framework for the CAMINO Collaborative could encompass the following elements.

K-12 INTEGRATION AND EARLY CAREER

Early exposure to STEM and technical careers will be critical through project-based learning, dual enrollment, and career exploration programs. This also includes pathways from high school to postsecondary credentials, including industry recognized certifications. APS supports certifications for students, prior to graduation. CNM's dual credit programs are broadly available to high school students attending public, charter, private and homeschooled across the state of New Mexico.

Successful models integrate career exploration, project-based learning, and dual enrollment opportunities beginning in middle and high school. For example, [the Core Plus Aerospace Manufacturing Pathway in Washington State](#) allows high school students to earn industry-recognized certifications, fulfill graduation requirements, and articulate credits directly into partner college programs and internships with employers like Boeing.

COMMUNITY COLLEGES

Community colleges are uniquely positioned to serve diverse populations, including underserved and nontraditional students, by offering accessible, affordable, and flexible training options.

The stackable credential model is a learner-centered

III. TRAINING DESIGN

ecosystem. At each stage, students can earn industry-valued credentials that provide immediate workforce entry or advancement, while maintaining the option to return for further education. For example, a student might begin with a short-term certificate in CNC machining, gain employment, and later return to complete an associate degree in advanced manufacturing, with all prior coursework counting toward the degree. This flexibility is essential for working adults and nontraditional students, who may need to balance education with employment and family responsibilities.

[CNM's Workforce and Community Success](#) provides employer services that include: Hire CNM job board, recruitment events, internships, and direct engagement with students and faculty through classroom visits. Employers are encouraged to participate in program Advisory Committees to provide direct input and feedback on CNM's programs. [CNM's Ingenuity](#) develops and offers customized contract skills training in response to employer workforce needs.

For national examples, [Monroe Community College's Robotics and Automation program in New York](#) allows students to earn micro-credentials, certificates, and associate degrees, with each step aligned to employer demand and articulated to four-year institutions. The [Goodskills Career Builder program in New York](#) provides targeted skills training, job placement, and wraparound support, resulting in high completion and employment rates.

UNIVERSITIES AND DEGREE PATHWAYS

Universities play a critical role in advancing technical education by offering bachelor's and graduate degrees in engineering, materials science, computer science, and related fields. Their programs deepen the talent pipeline beyond technician-level roles, preparing students for advanced engineering, systems integration, and R&D positions that are essential to New Mexico's emerging manufacturing economy. Articulation agreements and transfer pathways ensure that students can progress seamlessly from community colleges to four-year institutions, with full credit for prior learning. Interdisciplinary degree programs cultivate the agile thinking and cross-sector competencies required in today's advanced manufacturing and national security workforce.

New Mexico's three research universities bring complementary strengths that uniquely position the state to support an integrated advanced manufacturing ecosystem. The **University of New Mexico (UNM)** is home to leading programs in optical sciences, nanofabrication, materials engineering, and AI/ML research, with deep ties to Sandia and AFRL. UNM's expertise in photonics, microelectronics, and advanced materials provides a critical foundation for semiconductor-adjacent manufacturing, quantum technologies, and secure hardware development.

New Mexico State University (NMSU) brings nationally recognized strengths in aerospace engineering, autonomous systems, and energy systems—fields tightly aligned with defense manufacturing, space technologies, and advanced energy hardware. Its proximity to White Sands Missile Range and its leadership in unmanned aerial systems, propulsion, and directed-energy research make NMSU a natural partner for applied testing, prototyping, and workforce development in defense-related manufacturing.

New Mexico Tech (NM Tech) contributes deep expertise in mechanical engineering, materials science, explosives engineering, and high-performance computing. Its unique test ranges, energetic materials programs, and engineering research centers provide capabilities that few states can match. NM Tech's applied engineering culture and close collaboration with national laboratories make it a critical partner for advanced materials, additive manufacturing, and systems-integration training.

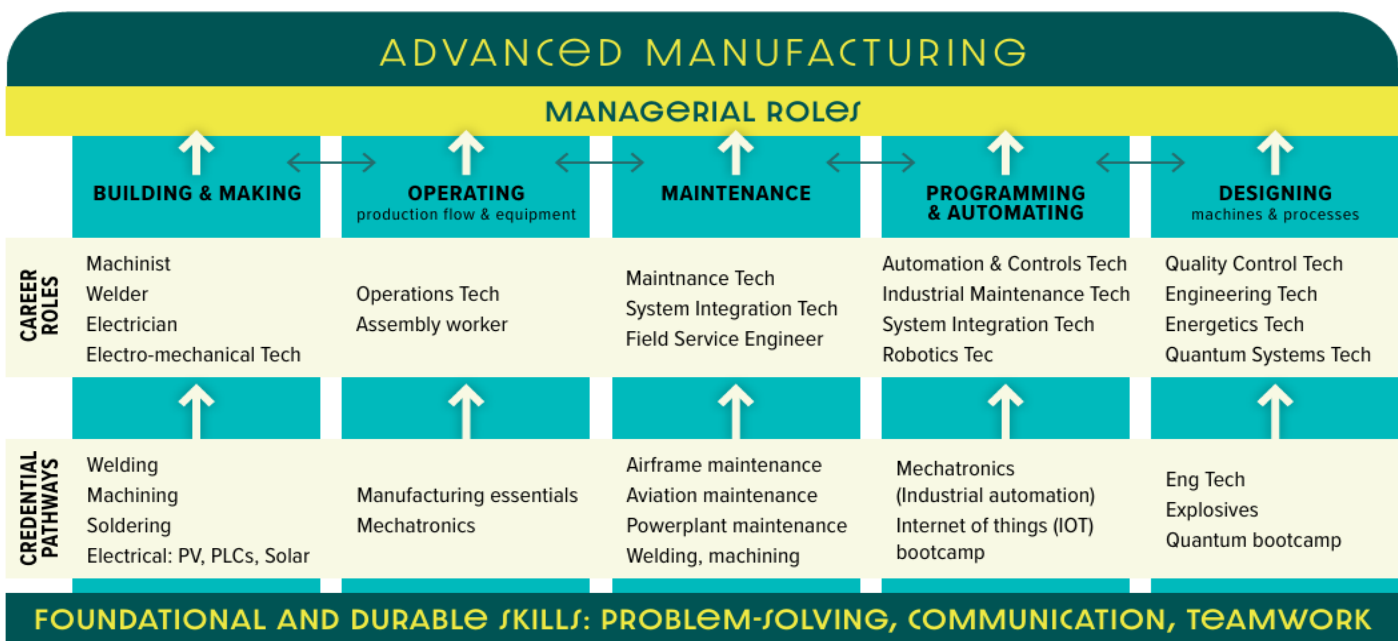
Together, these institutions form a research backbone that complements CAMINO's applied training mission. Their combined strengths—in photonics, materials, aerospace, energy systems, AI, and defense technologies—create a continuum of opportunity from technician training to advanced engineering education, applied research, and commercialization. As the CAMINO Collaborative matures, structured partnerships with UNM, NMSU, and NM Tech will be essential to building a fully integrated, statewide talent pipeline capable of supporting New Mexico's growing advanced manufacturing and national security sectors.

EXAMPLE: STACKABLE CREDENTIAL PATHWAY IN ADVANCED MANUFACTURING

CREDENTIAL LEVEL	EXAMPLE CREDENTIAL/PROGRAM	TYPICAL DURATION	PATHWAY PROGRESSION
Entry-Level Certificate	Manufacturing Fundamentals Cert.	8–16 weeks	Entry-level employment, next step: Technical Certificate
Technical Certificate	CNC Machining, Mechatronics Cert.	1 year	Mid-level employment, next step: Associate Degree
Associate Degree	AAS in Advanced Manufacturing	2 years	Technician roles, transfer to Bachelor's
Bachelor's Degree	BS in Engineering Technology	4 years total	Engineering, supervisory roles
Industry Certification	NIMS, MSSC, AWS, etc.	Varies	Stackable at any level

Note: Each credential is designed to be a milestone with labor market value and to articulate seamlessly into the next level.

EXAMPLE: ADVANCED MANUFACTURING CAREER AND CREDENTIAL PATHWAY, CNM



VIII. Metrics, Evaluation, and Outcomes

Performance measurement may occur across multiple dimensions, including strategy and management, teaching and learning, products and services, and ecosystem relationship management. This may include:

- Credential attainment and progression rates
- Employment and wage outcomes
- Equity and access metrics
- Employer satisfaction and engagement
- Innovation and technology transfer outputs

Ideally, data infrastructure should support real-time tracking, longitudinal analysis, and continuous improvement, with mechanisms for stakeholder feedback and peer review. Programs should also align with federal Workforce Innovation and Opportunity Act (WIOA) performance indicators, including employment rates, median earnings, credential attainment, measurable skill gains, and effectiveness in serving employers. State and regional metrics, such as those used in the Build Back Better Regional Challenge and Good Jobs Challenge, provide additional frameworks for evaluation and accountability.

Ensuring equity and access is fundamental to the CAMINO Collaborative's mission. Strategies may include:

- **Targeted Outreach and Recruitment:** Engage underrepresented populations, including women, people of color, Indigenous communities, and rural residents.
- **Wraparound Supports:** Provide academic advising, career counseling, childcare, transportation, and financial assistance to reduce barriers to participation. Integration of childcare within the CAMINO Collaborative should be a long-term aspiration. [Explora Science Center, Brillante](#), is teaching STEAM to children in preschool. The organization is able to leverage [New Mexico Universal Childcare funding](#) for participating families.

- **Flexible Delivery Models:** Offer online, hybrid, evening, and weekend courses to accommodate working learners and nontraditional students.
- **Inclusive Curriculum and Faculty Development:** Ensure that curricula reflect diverse perspectives and that faculty receive professional development in equity and inclusive teaching practices.

Regular monitoring of participation, completion, and employment outcomes by demographic group is essential for identifying gaps and implementing targeted interventions. Peer review, stakeholder engagement, and iterative program design support continuous improvement and accountability.

IX. Curriculum Development and Faculty Professional Development

A. Curriculum Development

Curricula should be developed in partnership with industry, national laboratories, and academic experts to ensure alignment with current and emerging workforce needs. Key elements include:

- **Competency-Based Design:** Focus on mastery of industry-relevant skills and knowledge, with clear learning outcomes and assessment criteria.
- **Integration of Work-Based Learning:** Embed apprenticeships, internships, and project-based experiences throughout the curriculum.
- **Alignment with Industry Certifications:** Ensure that coursework prepares students for recognized credentials such as NIMS, MSSC, AWS, and CCT.
- **Interdisciplinary and Agile Thinking:** Foster cross-sector competencies, problem-solving, and adaptability to prepare students for dynamic career pathways.

B. Faculty Professional Development

Faculty development is critical for maintaining program quality and relevance. Strategies include:

- **Instructional Capacity:** Ensure adequate number of qualified instructors to support workforce growth priority areas
- **Industry Externships and Exchanges:** Enable faculty to gain hands-on experience with current technologies and practices.
- **Professional Certification and Training:** Support faculty in obtaining industry-recognized credentials and participating in ongoing professional learning.
- **Communities of Practice:** Foster collaboration and knowledge sharing among faculty, industry partners, and national laboratories.

Conclusion & Path Forward

The CAMINO Collaborative is entering a pivotal moment. The vision is clear, the urgency is unmistakable, and the opportunity is within reach — but several foundational decisions are now underway that will shape the next phase of this initiative. Governance and operating models are being considered to ensure the right balance of lab adjacency and private-sector agility. Land and facility planning are advancing through coordinated discussions among key partners. A financial architecture, including capital stack, operating model, and long-term sustainability is under active development. An opportunity exists for educational institutions to work toward a unified workforce pipeline that aligns K–12, community colleges, universities, and national laboratories into a single talent engine.

These actions require deliberation, stakeholder alignment, and in some cases formal votes or approvals. The path ahead is defined by collaboration and a commitment to building a statewide ecosystem that can scale with New Mexico's ambitions.

In the near term, partners will finalize governance, secure land, advance architectural design, and establish the financial model that will support construction and operations. Workforce leaders will align on curricula, credentials, and training pathways. Industry partners will help shape equipment needs, workflows, and the campus's entrepreneurial infrastructure. And federal partners will continue to guide mission alignment and the federal investment strategy.

But the larger call to action is this: **New Mexico must choose to build.** The state stands at a rare inflection point — one where national security needs, federal investment, workforce urgency, and economic opportunity converge. This campus is the vehicle that can translate this moment into generational impact: high-wage jobs, reduced underemployment, stronger communities, and a manufacturing ecosystem capable of powering the industries that will define the next century.

The decisions made in the months ahead will determine whether New Mexico seizes this opportunity or watches it move elsewhere. The work ahead requires leadership and sustained commitment — but the reward is extraordinary. The CAMINO Collaborative is more than a campus. It is a statewide strategy, a national asset, and a generational investment in New Mexico's future.

This is the moment to act.

This is the moment to build.

**And this is the moment for
New Mexico to lead.**



Jefferson Middle School students let their car loose under the watchful eye of Sandia volunteer Justin Tea during the New Mexico Electric Car Challenge.

Sponsored by Sandia National Laboratories, the annual event encourages students to push their creativity to the limit while embracing science, technology, engineering and math to design and build an electric car that can travel the fastest while carrying a payload.

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Thank you to the Advanced Manufacturing Working Group

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