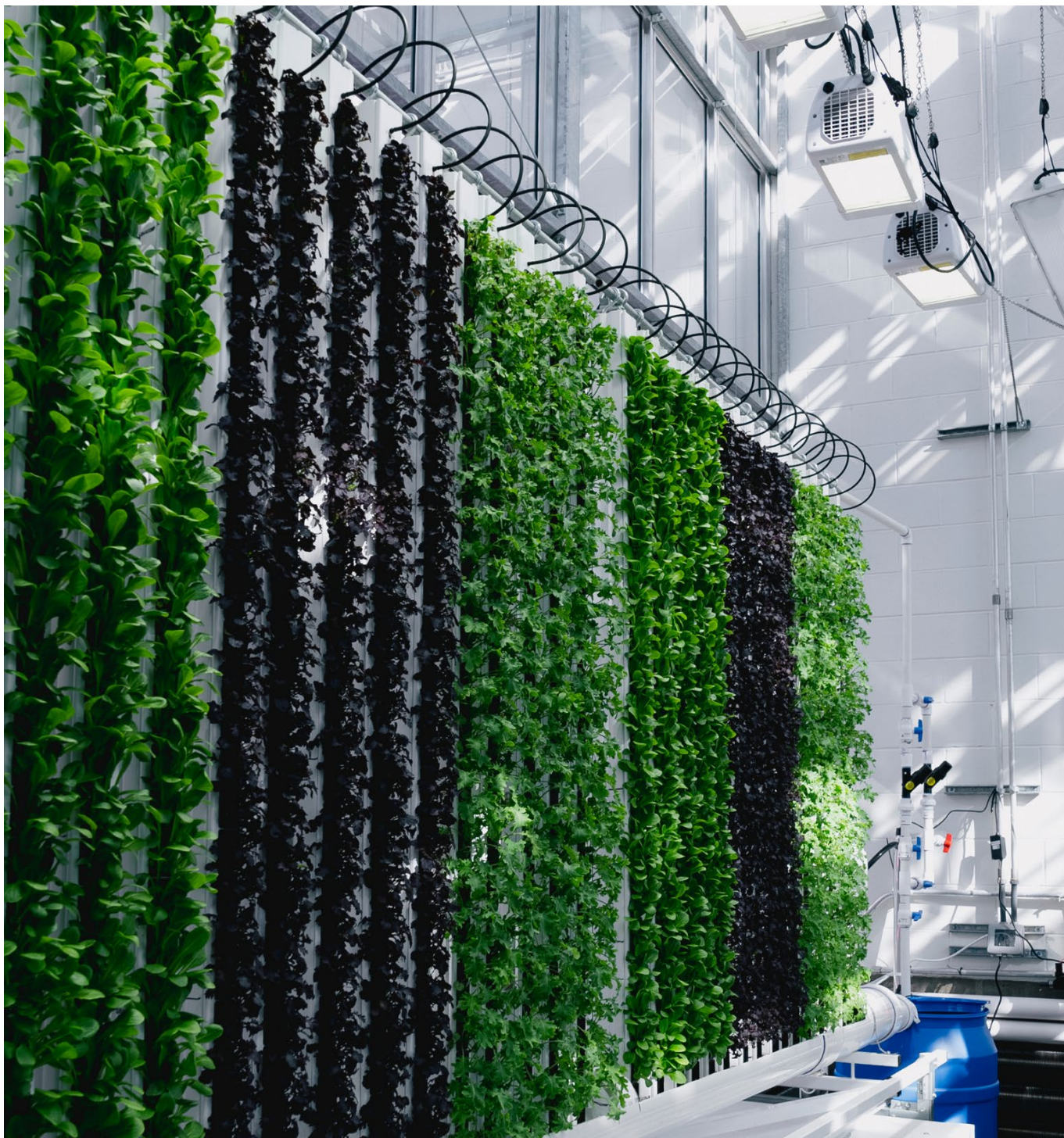




WYOMING SCIENCE AND TECHNOLOGY PLAN 2026

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Executive Summary

The Wyoming Science and Technology Plan provides a strategic framework to strengthen research, innovation, education, and workforce development in ways that support Wyoming's leading industries, emerging opportunities, and rural communities. Wyoming's economy is rooted in energy, agriculture, natural resources, tourism, and education, while also benefiting from growing capacity in advanced technologies, data systems, and entrepreneurship. To remain competitive in a rapidly evolving economy, the state must align research priorities, workforce preparation, and cross-sector partnerships in ways that respond to both statewide strengths and local community needs.

This plan is guided by a vision of advancing science and technology to support resilient and prosperous rural communities across Wyoming. It emphasizes the importance of applied research, educational opportunity, and innovation systems that connect K-12 schools, community colleges, the University of Wyoming, industry, government, tribal partners, and communities. It also recognizes that Wyoming's rural geography creates both challenges and opportunities: distance can limit access to education, healthcare, technology, and workforce pathways, but it also creates a strong case for targeted investment in locally relevant research and innovation.

The plan identifies six Strategic Priority Areas for coordinated investment and action:

- Energy and Mining;
- Agriculture and Natural Resources;
- Wildlife, Environment, and Tourism;
- Emerging Technologies;
- Advanced Materials and Manufacturing;
- Resilient and Connected Rural Communities.

These areas reflect Wyoming's economic foundations, areas of research strength, and opportunities for future growth. Across each priority area, the plan highlights the role of integrated training and education, including certificates, degree programs, internships, apprenticeships, experiential learning, leadership development, and community-based partnerships.

Together, these priorities are intended to strengthen Wyoming's research ecosystem, expand opportunity for students and workers, support innovation and entrepreneurship, and help communities address critical needs through science and technology. By investing in research capacity, workforce pipelines, and collaborative infrastructure, Wyoming can build on its existing strengths while preparing for future challenges and opportunities. This plan serves as a guide for aligning public, private, academic, and community efforts to advance long-term prosperity across the state.

VISION

The Wyoming Science and Technology Plan serves as a strategic guide to strengthen research, innovation, education, and workforce development that supports Wyoming's leading industries and emerging opportunities. The plan aligns statewide research capacity, economic development initiatives, and educational programs to address community needs, advance Wyoming's competitiveness in a rapidly evolving global economy, and strengthen rural prosperity. Through coordinated investment in science, technology, and workforce infrastructure, Wyoming will reinforce its leadership in energy and innovation while supporting rural needs, strengthening community resilience, and building a highly skilled workforce for the future.



GUIDING PRINCIPLES

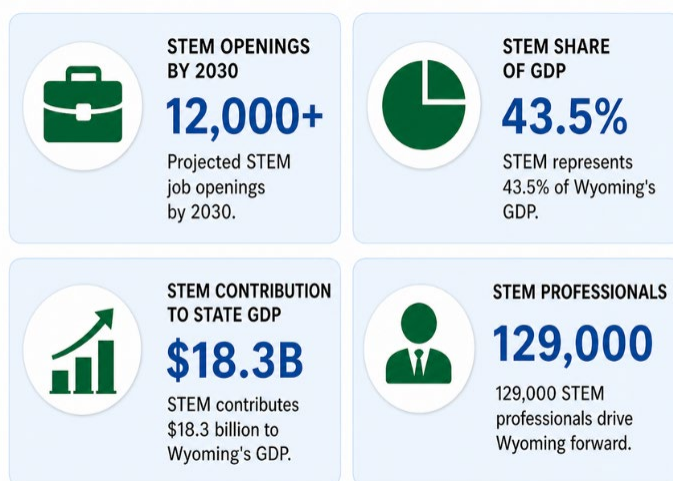
The implementation of this framework is anchored by five core principles designed to bridge the gap between applied research and community impact across Wyoming.

- Align with Wyoming's economic strengths and emerging opportunities
- Build strong and resilient rural communities through applied research and community-driven innovation
- Integrate education and workforce development into all strategic areas
- Leverage partnerships between government, higher education, industry, tribal leaders, and communities
- Advance rural access to technology, healthcare, and economic opportunities

STATE OVERVIEW

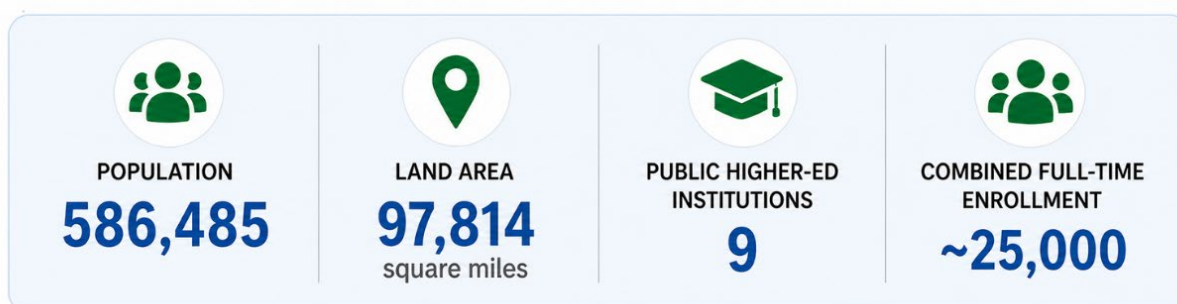
Wyoming's economy is anchored by natural resources and energy production, including coal, natural gas, coalbed methane, oil, uranium, trona, and critical minerals, as well as agriculture, tourism, outdoor recreation, and education. At the same time, the state is building capacity in high-tech sectors, supported by assets such as the NCAR-Wyoming Supercomputing Center in Cheyenne. Continued investment in emerging technologies, digital infrastructure, and statewide connectivity will be essential to strengthening Wyoming's long-term resilience and competitiveness.

STEM careers play an important role in Wyoming's economy. Projections from Wyoming Labor Force Trends indicate that between 2020 and 2030, STEM occupations in the state will expand at nearly double the national rate, creating more than 12,000 openings as a result of new job growth, career changes, and retirements. Additionally, STEM directly contributes \$18.3 billion to Wyoming's economy—43.5% of the state's GDP—making Wyoming the 4th largest STEM percentage in the country. Wyoming's 129,000 STEM professionals comprise one-third of the state's workforce.[1]



Continued growth of innovation and STEM careers in the state requires the integration of research development, entrepreneurship, and technology transfer to enhance Wyoming's research ecosystem and create opportunities for future generations. Wyoming boasts a meaningful startup survival rate, with 76.56% of startups surviving their first year as of 2021, and a growing entrepreneurial spirit.[2] To build on this momentum, the state should expand awareness of existing resources, strengthen connections among innovators, educators, industry partners, and support organizations, and create clearer pathways from research to application, commercialization, and community use. Supporting innovation testbeds, startup assistance, and collaborative research partnerships can help move ideas from laboratories, classrooms, and field settings into practical solutions for Wyoming industries and communities. Through coordinated investment in science, technology, and entrepreneurial infrastructure, Wyoming will position itself as a leader in research and innovation.

Providing STEM opportunities for students to help develop Wyoming's future workforce is also crucial. Wyoming is an extremely rural and sparsely populated state, having a population of 586,485 people distributed over an area of 97,814 square miles. Of the state's ten largest cities, only Cheyenne and Casper have populations over 50,000 people, and only nine additional Wyoming cities have over 10,000 residents, according to U.S. Census data. Within this sparsely populated expanse, there are only nine public institutions of higher education: UW, the only public, four-year, PhD degree granting institution, and eight community colleges. Combined full-time enrollment at all nine institutions is close to 25,000 students, with roughly half at UW, according to the Wyoming Community College Commission and UW Institutional Analysis.



Students in Wyoming are often far-removed from science and technology opportunities that are more accessible in larger cities. Many also face difficult transitions from small rural environments to larger cities and universities, so providing opportunities for students to participate in hands-on research experiences and applied learning can be life changing. Wyoming's future prosperity depends on cultivating a dynamic, resilient, and skilled workforce capable of advancing innovation across key industries. To capture these opportunities, the state must invest in education, workforce training, and entrepreneurial ecosystems that connect K-12 schools, community colleges, the University of Wyoming, industry, and communities statewide. Integration through various levels of learning and the development of stronger pipelines into STEM education and careers will enable Wyoming's current and future workforce to drive innovation, expand opportunity, and share in the state's economic prosperity.

STRATEGIC PRIORITY AREAS

The following Strategic Priority Areas identify sectors where Wyoming is well positioned to strengthen research, innovation, workforce development, and long-term economic resilience. These areas reflect the state's existing assets, including its natural resources, agricultural and environmental systems, educational institutions, entrepreneurial potential, and growing capacity in emerging technologies. They also reflect the needs of Wyoming's rural and frontier communities, where investments in science and technology can improve access to opportunity, expand essential services, and support community well-being.



Each priority area includes both topics for research and innovation and opportunities for integrated training and education. Together, these areas are intended to guide collaboration among industry, government, higher education, community colleges, tribal partners, and local communities. While each priority area is distinct, they are also interconnected. Advances in digital infrastructure, data systems, materials science, energy technologies, agriculture, healthcare, and community capacity can reinforce one another and help build a more resilient and prosperous future for Wyoming.

1. ENERGY AND MINING

Wyoming is a national leader in energy production and exports, and in critical mineral research and development. Oil drilling and gas extraction, along with coal mining and petroleum refining, generate a combined \$21.3 billion in revenue[3]. Wyoming also produces critical minerals important for economic and national security, and has a long-standing role in supplying the resources that power industries across the nation. As energy systems evolve, Wyoming has an opportunity not only to sustain its traditional strengths, but also to lead in the development, testing, and deployment of new energy technologies. Continued investment in research, innovation, and workforce development will be essential to advancing carbon management, nuclear energy, hydrogen, grid modernization, critical mineral processing, and related technologies that can strengthen Wyoming's economy and expand its role in the nation's energy future. Building on existing industry expertise, research capacity, and educational partnerships, this priority area can help position Wyoming at the forefront of both legacy and emerging energy sectors.

Areas of Interest:

- Wyoming coal and carbon engineering
- Nuclear technology
- Hydrogen energy
- Critical minerals
- Power grid modernization and electrical systems research
- Carbon capture and storage

Integrated Training & Education:

- Develop industry-aligned certificate, apprenticeship, and degree programs in power systems, nuclear technology, critical minerals, and carbon engineering
- Expand hands-on training through simulation labs and field-based internships
- Collaborate with community colleges, tribal partners, and UW for workforce pipeline initiatives
- Expand K-12 educational programs focused on energy and mining
- Develop training programs for working professionals in energy industries who want to pivot to working in emerging energy sectors
- Develop intensive leadership programs for early career professionals and graduate students

2. AGRICULTURE AND NATURAL RESOURCES

Agriculture has long been a foundational sector of Wyoming's economy and culture, contributing \$2.43 billion in value added in 2023.[4] To ensure long-term sustainability and competitiveness, Wyoming must invest in agricultural technologies and land stewardship practices that balance economic productivity with ecosystem resilience. Because Wyoming producers operate across large distances, variable climates, and water-limited environments, research and innovation in precision agriculture, water management, drought resilience, and ecosystem monitoring are especially important to the state's future. Expanding science and technology capacity in these areas can help producers improve efficiency, strengthen rangeland and watershed stewardship, support working lands, and adapt to changing environmental and market conditions. Investment in agricultural research, workforce development, and entrepreneurship will also help connect producers, students, and communities to new tools, new business opportunities, and stronger rural livelihoods across the state.

Areas of Interest:

- Precision agriculture and smart ranch management technologies
- Controlled environment agriculture (greenhouse, vertical farming)
- Water use efficiency, modeling, atmospheric science, and drought resilience strategies
- Rangeland ecology and ecosystem monitoring and research
- Agricultural leadership and entrepreneurship development

Integrated Training & Education:

- Develop certificate and degree programs in precision agriculture, rangeland management, and ag-based environmental technologies (UAVs, sensors, AI)
- Expand applied research and student internships in agricultural innovation, water systems management, and rural ecosystem services
- Support farmer and rancher training workshops in ag-tech tools, water conservation practices, and ecosystem stewardship
- Establish youth agriculture and natural resources education initiatives to build early awareness of ag-tech careers and conservation challenges

3. WILDLIFE, ENVIRONMENT, AND TOURISM

Outdoor tourism is a cornerstone of Wyoming's economy, contributing \$2.29 billion in value added in 2024, or 4.5% of state GDP.[5] Wyoming's wildlife and environmental landscapes are central to that economic strength and to the state's identity.

Technological innovation and research can improve the sustainability, efficiency, and economic impact of this sector while also creating opportunities to study wildlife, environmental change, visitor behavior, and regional economic effects. In a state where tourism depends heavily on the long-term health of natural systems, investments in monitoring, conservation science, data tools, and visitor-serving technologies can support both stewardship and economic resilience. Strengthening this area will help Wyoming better manage assets such as native fisheries, migratory corridors, and outdoor recreation destinations while also improving the experiences, services, and information systems that support residents, visitors, and businesses across the state.

Areas of Interest:

- Tourism technology infrastructure (data tools, VR experiences, visitor analytics, AI)
- Wildlife ecology and environmental research
- Social and economic impact research
- Examination of hunting/fishing recreation on tourism economy and wildlife management

Integrated Training & Education:

- Support tourism-specific career pathways through certificate and degree programs
- Support internships with parks, lodges, and tourism businesses
- Embed research opportunities into tourism, hospitality, and environmental science programs
- Support research into human behavior, wildlife ecology, economic impacts, and environmental challenges in Wyoming

4. EMERGING TECHNOLOGIES

Digital infrastructure and technology innovation will drive economic growth, improve government services, and open new career opportunities for Wyoming citizens.[6] As fields like quantum computing, artificial intelligence, machine learning, and cybersecurity reshape the modern economy, research and workforce preparation in these areas will be critical to ensuring Wyoming's competitiveness. For Wyoming, these technologies are not only future-facing industries; they are also practical tools for addressing rural distance, expanding access to education and services, strengthening public-sector capacity, and supporting innovation across energy, agriculture, manufacturing, and healthcare. However, access to education and career pathways in advanced technology remains unevenly distributed, particularly in rural and frontier communities.[7] Students in these regions often lack exposure to foundational concepts in quantum science, AI, and its applications, limiting awareness of future career opportunities in this growing sector.[8] Expanding educational outreach, experiential learning programs, digital infrastructure, and partnerships with industry and public agencies will help address these disparities and position Wyoming residents for success in the evolving digital economy. Development of data hubs, along with sharing and re-use of data, will also enable research and educational opportunities.

Areas of Interest:

- Artificial intelligence, machine learning, data science, and advanced analytics
- Quantum computing, information sciences, and quantum materials
- Cybersecurity and secure digital systems
- Blockchain applications
- Data infrastructure, sharing, and reuse
- Digital innovation for public services, education, and rural communities

Integrated Training & Education:

- Support existing and develop new degree and certificate programs in AI, data science, cybersecurity, and software development, and related fields
- Support apprenticeships and internship programs with tech companies and state agencies
- Offer community coding bootcamps, hackathon challenges, virtual reality experiences, maker labs, and other experiential learning opportunities

5. ADVANCED MATERIALS AND MANUFACTURING

Manufacturers across Wyoming need continued access to technical resources, advanced technologies, and a skilled workforce to remain competitive. Wyoming's manufacturing sector employed about 10,600 people in December 2025[9], and recent University of Wyoming analysis points to growing manufacturing clusters in Sheridan and Casper.[10] As manufacturing diversifies in the state, materials science and engineering research can help drive innovation in energy technologies, advanced composites, and value-added products. Wyoming's existing strengths in catalytic materials, biomaterials, composite materials, advanced materials processing, additive manufacturing, and energy materials, together with resource opportunities tied to rare earth elements and other critical minerals,[11][12] provide a foundation for new industries, investment attraction, and stronger regional supply chains.

Areas of Interest:

- Advanced manufacturing processes, automation, and digital fabrication
- Research and development across the critical minerals supply chain, including rare earth element separation, purification, and advanced manufacturing applications
- Energy materials for renewable energy systems and energy storage
- Sustainable and bio-based materials development
- Manufacturing and materials testing facilities, technology innovation centers, and innovation hubs

Integrated Training & Education:

- Expand certificate and degree programs in advanced manufacturing, robotics, and materials science
- Support undergraduate and graduate research opportunities in energy materials and advanced manufacturing processes
- Develop internship pipelines, apprenticeship programs, and industry certifications linking students with Wyoming manufacturers, research centers, and national labs
- Expand makerspaces and innovation hubs to encourage entrepreneurship and prototype development in emerging manufacturing sectors

6. RESILIENT AND CONNECTED RURAL COMMUNITIES

Wyoming's rural and frontier communities face interconnected challenges in healthcare access, mental health services, childcare, digital connectivity, and local capacity that affect quality of life and long-term resilience. HRSA shortage-area data indicate that Wyoming would need 29 primary care practitioners, 11 dental practitioners, and 41 mental health practitioners to remove current Health Professional Shortage Area designations,[13] while the state's Digital Access Plan estimates that only about 77% of broadband serviceable locations are currently served, leaving 15% unserved and 8% underserved.[14] Broader rural resilience challenges also extend beyond healthcare: more than 10,000 Wyomingites may be out of the workforce because they lack access to necessary childcare, and the number of childcare providers in the state declined from 721 in 2014 to 527 in December 2024.[15] Investing in rural healthcare infrastructure, telehealth and other technology-enabled services, community-based and biomedical research opportunities, and the systems that support health, education, and economic participation can strengthen community well-being across the state. Building on existing Wyoming programs and partnerships, this priority area can help expand access to essential services, support leadership and preparedness, and create stronger education and workforce pathways for rural communities across the state.[16]

Areas of Interest:

- Healthcare and social services access, including rural healthcare delivery, mental and behavioral health services, childcare, and biomedical research opportunities
- Infrastructure and digital connectivity, including broadband, satellite and fiber systems, transportation, energy, and resilient housing
- Community leadership, social capital, and policy capacity for inclusive planning, civic engagement, and preparedness

Integrated Training & Education:

- Grow rural clinical and mental health training pathways for nursing, allied health, medical, and behavioral health learners
- Align telehealth training, certifications, and continuing education with existing Wyoming providers and programs
- Support biomedical research internships, community-based participatory research, and other student pathways linked to Wyoming organizations and rural communities
- Develop rural leadership and preparedness training opportunities for community-serving professionals and local partners

CONCLUSION AND NEXT STEPS

The Wyoming Science and Technology Plan provides a framework for advancing research, innovation, and workforce development in ways that are responsive to Wyoming's economy, communities, and future opportunities. The priority areas identified in this plan are grounded in the state's strengths while also recognizing the need to prepare for emerging industries, evolving technologies, and changing community needs. By linking research and innovation with education, workforce preparation, and cross-sector collaboration, Wyoming can expand opportunity and strengthen resilience across rural and urban communities alike.

Successful implementation of this plan will require continued coordination among state agencies, higher education institutions, community colleges, industry partners, tribal leaders, local communities, and other stakeholders. It will also require sustained attention to workforce pathways, entrepreneurship, infrastructure, and the translation of research into practical application. In this way, the plan is intended not only as a statement of priorities, but also as a guide for partnership, investment, and action.

As Wyoming moves forward, this plan can support decision-making around program development, research capacity building, public-private collaboration, and strategic investment. Through coordinated efforts across sectors, Wyoming can strengthen its position as a leader in energy, innovation, and applied research while creating broader access to opportunity and improving quality of life for communities across the state.



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