New Mexico Science & Technology Plan

Created and Endorsed by the State Committee for the New Mexico Established Program to Stimulate Competitive Research (EPSCoR); effective 19 July 2021

Vision

New Mexico envisions the state as a global leader in science and technology research and development that support a robust statewide economy.

Mission

New Mexico will accomplish its vision through strategic investments in infrastructure; developing a diverse, well-educated and qualified technical and research workforce; fostering innovative partnerships across the relevant business, industry, educational, governmental, and non-governmental sectors; and focusing research and development efforts on areas that align with the State's economic development priorities.

Strategic Approaches

Five principal approaches will be followed to realize our science and technology objectives.

1) ***Invest in Key Infrastructure.*** New Mexico will enhance research capacity through strategic investments in critical physical infrastructure such as state-of-the-art laboratories, advanced instrumentation, expansion of research programs and centers, high-performance computing and data/information infrastructure, and broadband internet.

2) ***Develop the Science and Technology Workforce.*** New Mexico will promote the development of a well-trained, competitive workforce by supporting innovative STEM education programs and experience-based training for secondary and post-secondary students; involving the public in STEM via engaging museum and informal science activities, and expanding the participation across all demographic groups and institutions, especially those that are underrepresented in STEM, within the State.

3) ***Foster Innovative Partnerships.*** New Mexico will foster and strengthen partnerships that can amplify research and development by expanding collaborations among colleges and universities, National Laboratories, businesses, and other governmental and non-governmental entities.

4) ***Accelerate Commercialization of Intellectual Property***. New Mexico will engage with Councils of Government, State and Federal governmental entities and business and industry leaders to accelerate the generation and commercialization of intellectual property created by academic and Laboratory scientists.

5) ***Build Fundamental and Applied Research Capacity in Existing and Emerging Areas that Align with New Mexico's Economic Development Priorities.*** New Mexico has identified high priority research and development needs that exist in eight key industries within the State.

- **Sustainable and Green Energy.** Develop new methods to harness and utilize sustainable energy from renewable sources such as algal biofuels, microgrids, solar and wind energy, geothermal sources, hydro power, hydrogen, and fuel cells.
- **Intelligent Manufacturing**. Innovate advanced intelligent technologies to enable rapid manufacturing of high-quality products, support dynamic production of personalized product demands, and optimize production and supply chain networks. Such innovation will combine knowledge from many fields including additive manufacturing, artificial intelligence and computer science, engineering, optics, nanotechnologies, physics, quantum materials and quantum information science, robotics, and manufacturing hardware and software development.
- **Biosciences**. Enhance knowledge of arid ecosystems, forecast dryland resilience to environmental change, and develop mitigation strategies using tools such as advanced sensor networks, artificial intelligence, and machine learning to monitor the dynamics of socio-ecological systems over space, time, and multiple scales of biological organization. Study fundamental health challenges at the organismal, cellular, and molecular levels, through the disciplines of biochemistry, bioimaging, molecular biology, biomedical engineering, and genetics to identify, understand, and treat diseases emerging in response to pathogens, and environmental and genetic causes.
- **Cybersecurity.** Create new approaches for protecting computers, networks, electronic communication systems, databases, and the facilities, instruments and systems that rely on these technologies from unauthorized access, attacks, and other threats, as well as develop a workforce to support Federal, State and Private Sector activity within the State.
- **Aerospace.** Foster and build on extant collaborative hubs for space engineering, manufacturing, testing, and launching of spacecraft. Enhance infrastructure and knowledge of supporting technologies such as advanced optics, high technology materials, communication systems, space vehicles, and autonomy.
- **Sustainable & Value-Added Agriculture**. Study the coupled agricultural-environmental-human system to identify and develop resilient, diverse, and more productive combinations of crops, livestock, and arid rangeland systems that increase productivity, enable sustainable food-value chains and water security, improve resilience of food infrastructure, and reduce hunger and malnutrition, thereby improving quality of life for all communities in the state and beyond. Vision realization through sustainable farming and ranching, precision and conservation agriculture, climate smart strategies, and improved genetics requires advanced approaches including genetic studies, advanced sensing and automation, artificial intelligence and data-driven decision support systems for stakeholders and policy makers.
- **Global Trade.** Develop an improved understanding of the complex global trading system and its impacts on the state. Although the dollar value of imports and exports has traditionally driven the efficacy of trade policy measures, this is only one factor of trade in an increasingly connected world. Developing a robust, multi-disciplinary approach to better understand global trade more holistically (e.g., considering supply chains, migration, immigration, pollution, disparate environmental rules, equity, and social justice)—provides improved information to help guide state policy and improve the economy.
- **Film & Television.** Develop the animation, visual effects, imaging technologies, and artificial intelligence and trained workforce to support the art, craft, and business of storytelling through digital filmmaking, digital arts, and other technology-supported and technology-driven forms of storytelling and creative expression.