

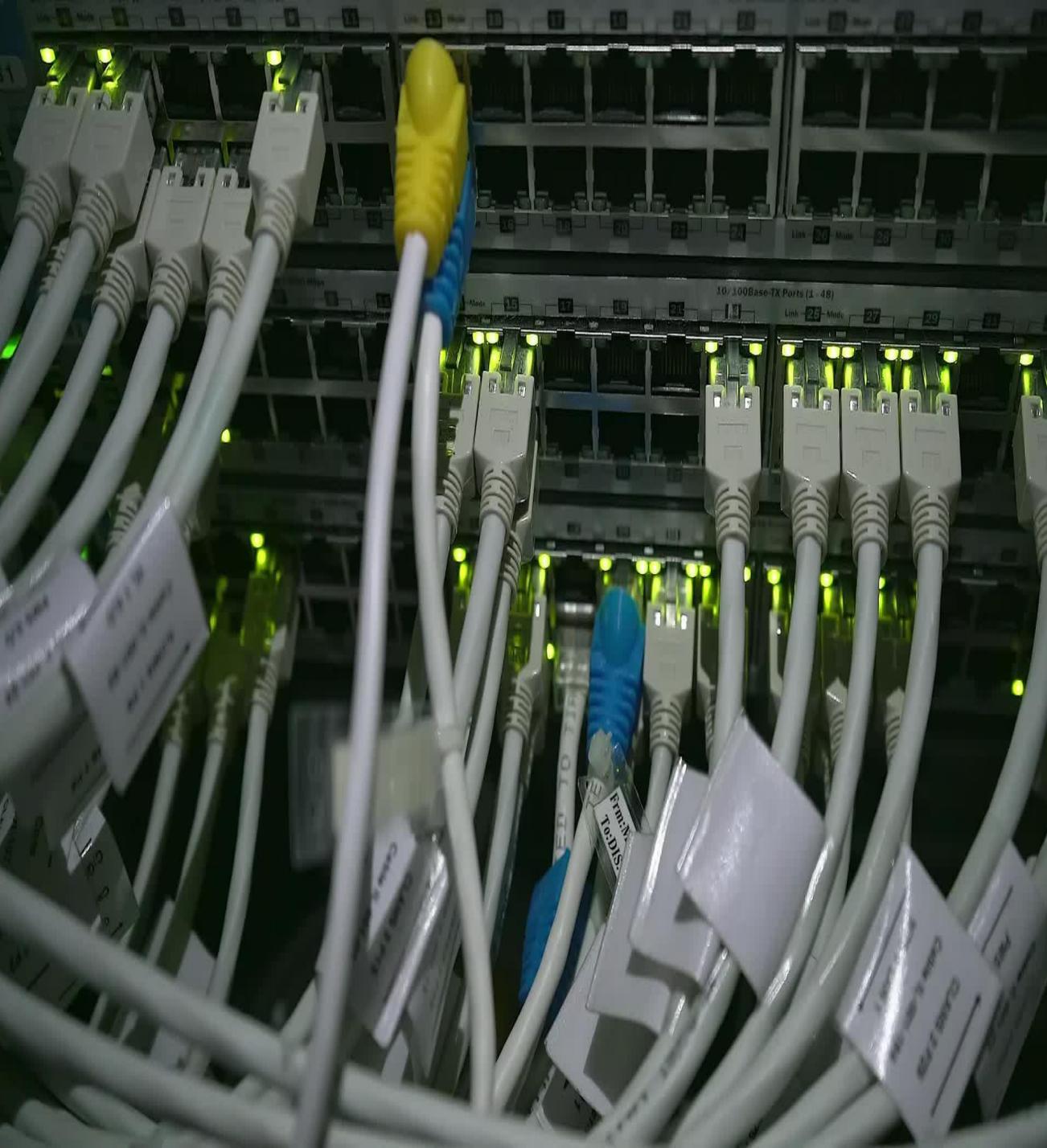
# Creating a STEM Innovation Network *for* New Mexico

Building a Coordinated System  
to meet NM's 21<sup>st</sup> Century  
STEM Education and  
Workforce Needs

Kersti Tyson, PhD, Director of Evaluation and  
Learning LANL Foundation

Jan Williams, Fellow, Society of Women Engineers

*Sponsored by Senator Harold Pope Jr.*



# Overview

- Introductions/acknowledgements
- Why New Mexico needs a STEM Innovation Network
- Purpose and desired outcomes of a STEM Innovation Network for NM
- What we are proposing
- Leveraging existing resources
- Legislation and funding
- Questions and discussion

# Who's on board?

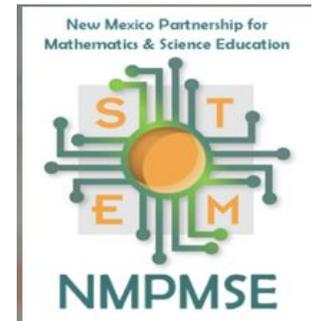


- Senate sponsor: Harold Pope, Jr.
- House co-sponsors/supporters
  - Joy Garratt
  - Yanira Gurrola
  - Tanya Mirabal-Moya
  - Tara Lujan

# Who's Contributed?

## STEM Network Partners

- ❖ Society of Women Engineers
- ❖ Northern NM STEAM Coalition
- ❖ LANL Foundation
- ❖ LANL Community Partner's Office
- ❖ New Mexico Partnership for Math and Science Education
- ❖ STEM Outreach Center, NMSU
- ❖ NM STEM (STEM Ecosystem coordinated by Explora)
- ❖ Regional Education Network Association
- ❖ NMSU - STEM Outreach Center
- ❖ UNM - STEM H
- ❖ Math and Science Advisory Council
- ❖ Math and Science Bureau at PED





SCIENCE | TECHNOLOGY | ENGINEERING | MATHEMATICS

EDUCATION

*STEM: a widely used interdisciplinary acronym that includes arts, health, social sciences, natural sciences, physical sciences, computer sciences, technology, mathematics, environmental sciences, biology and more.*

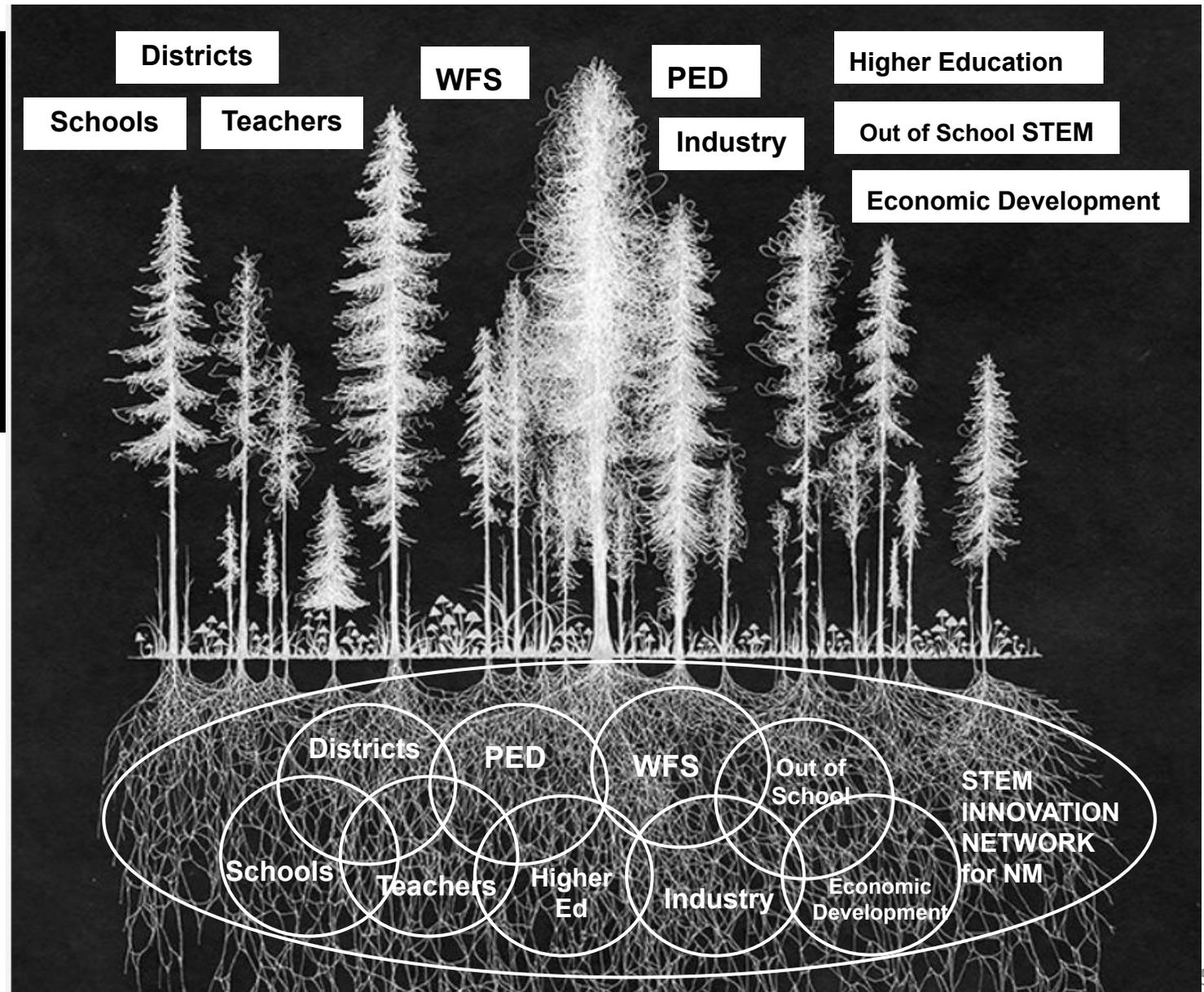
# Innovating NM's STEM Education System for the 21st Century

## What we have:

Individual teachers, schools, districts, programs, communities working in silos.

## What we need:

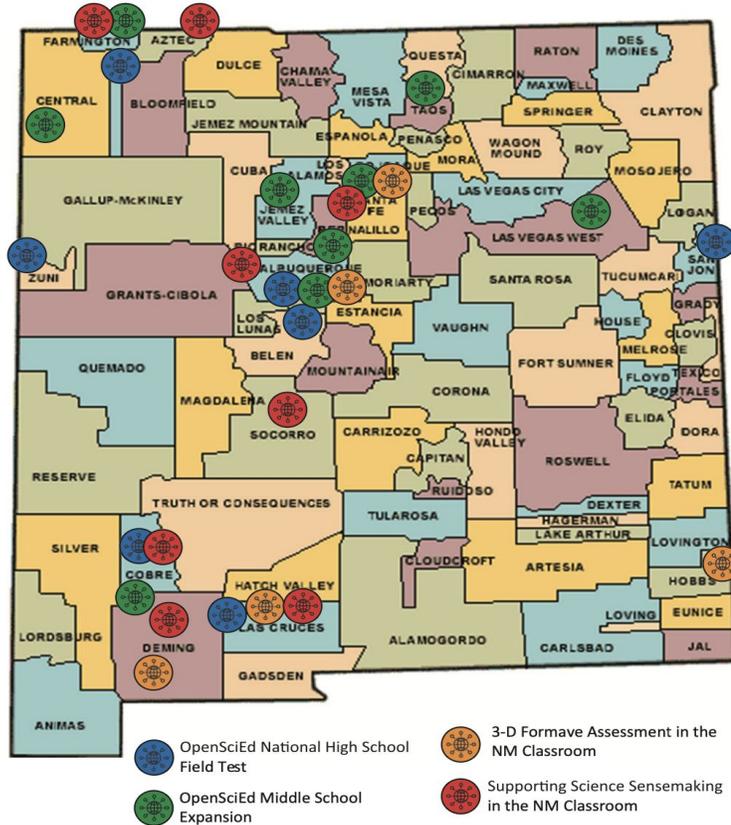
A networked system of STEM Education Innovation to meet the workforce & citizenship needs of 21st Century New Mexico



# Math & Science Bureau and MSAC: Necessary But Not Sufficient

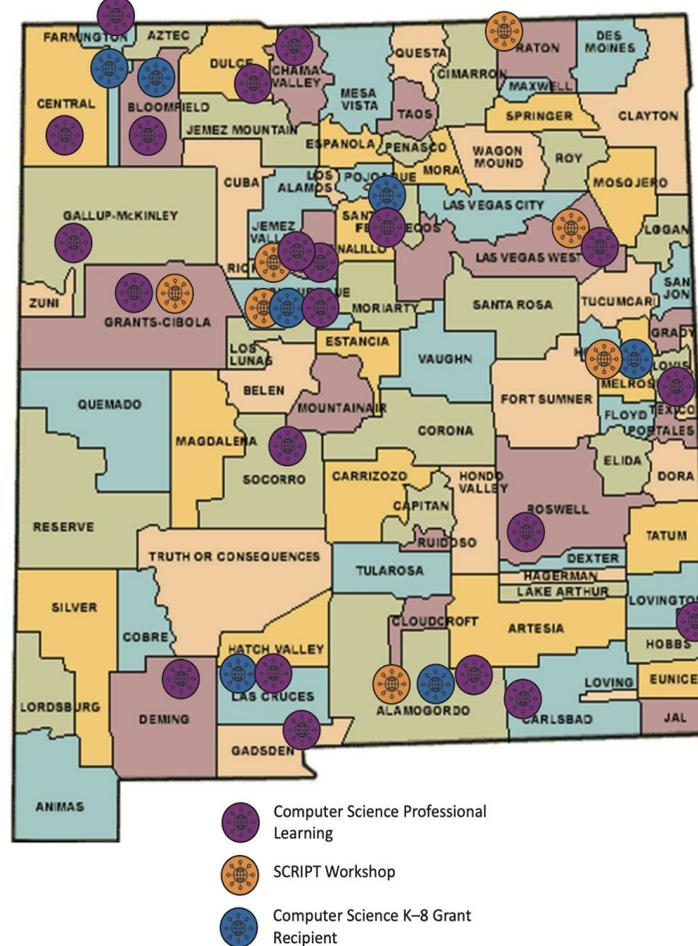
## Science Program Map

The map below shows districts that participated in science professional learning programs during the 2021–22 school year.



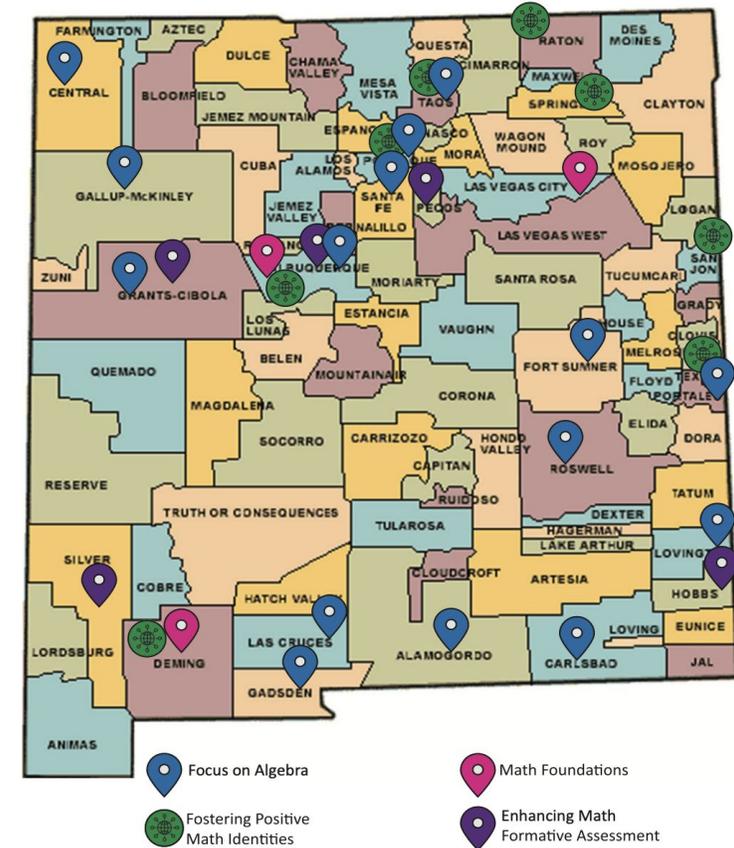
## Computer Science Program Map

The map below shows districts that participated in computer science professional learning programs during the 2021–22 school year.



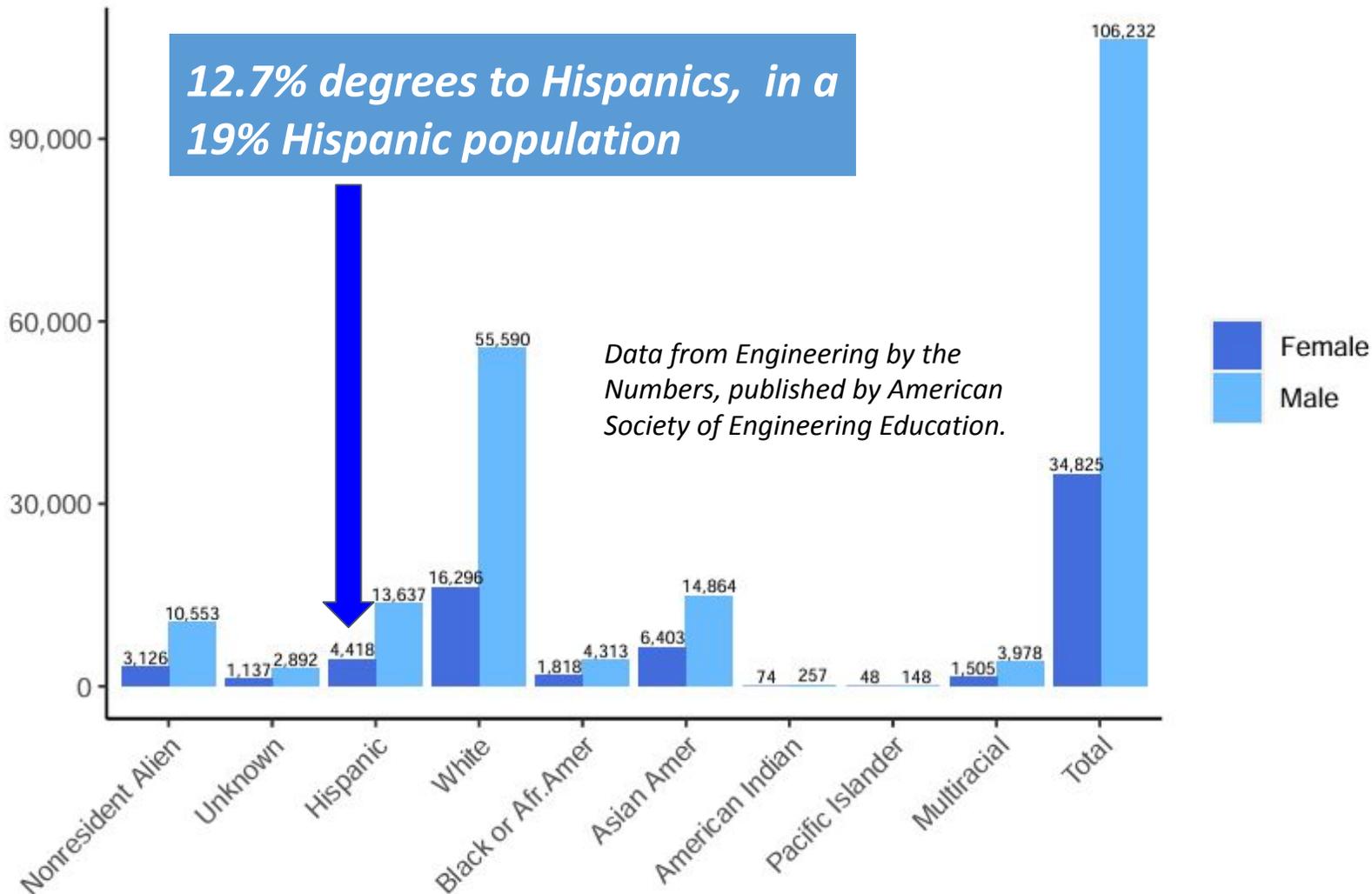
## Mathematics Program Map

The map below shows districts that participated in mathematics professional learning programs during the 2021–22 school year.



# Bachelor's Degrees Awarded in US in Engineering/Comp Sci 2021-22

*Bachelor's Degrees Awarded by Race, Ethnicity, and Gender*



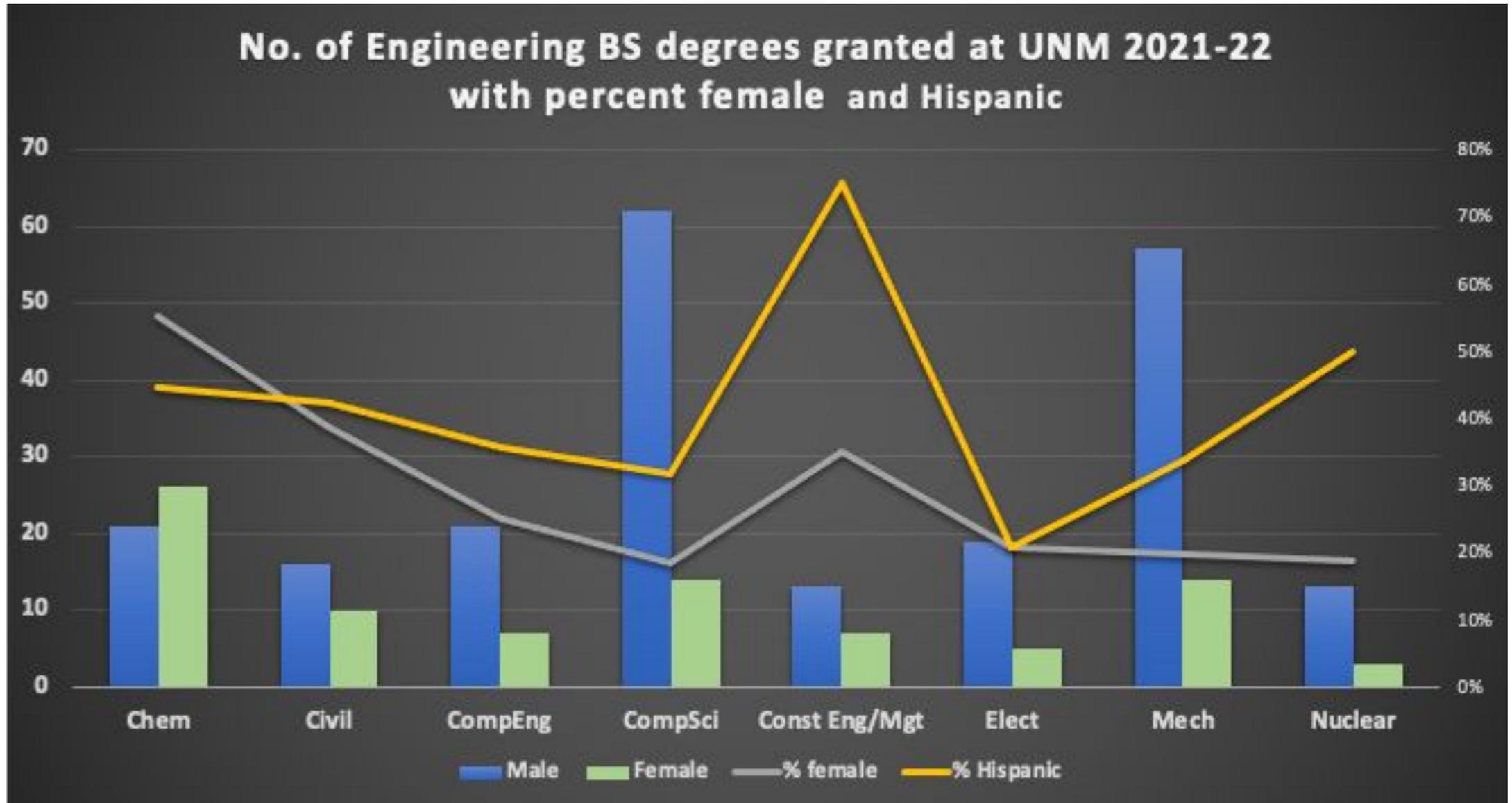
In 2021, New Mexico schools graduated:

- 678 Engineers;
  - 24% were women;
- 185 Computer Scientists;
  - 19% were women

Bachelor's Degrees Awarded in Engineering and Computer Science, by State, 2021  
 Source: National Center for Education Statistics, IPEDS

**NM could lead in graduating Hispanic & Native American STEM Professionals, but the work starts in Pre-K.**

The good news - UNM graduated a high percentage of Hispanic engineers



The bad news - there were only 118 of them (and women are 20% of the total)

# Why we need a STEM Innovation Network in NM

- Address poor health of STEM education in New Mexico
  - Math skills declining as students progress from K-12.
  - Not producing enough STEM graduates to fill STEM jobs
  - Inequality and lack of inclusion in preK-12 education and employment
    - Racial, gender, geographic, and socio-economic inequality in STEM education opportunities
    - STEM learning not aligned with state & regional needs.
- Systematically & collaboratively transform opportunities for learning Math and Science to 21<sup>st</sup> century interdisciplinary, inquiry-based STEM learning.
- Align current and future employment needs in NM with access to aligned STEM learning opportunities.



# Why we need a STEM Innovation Network in NM

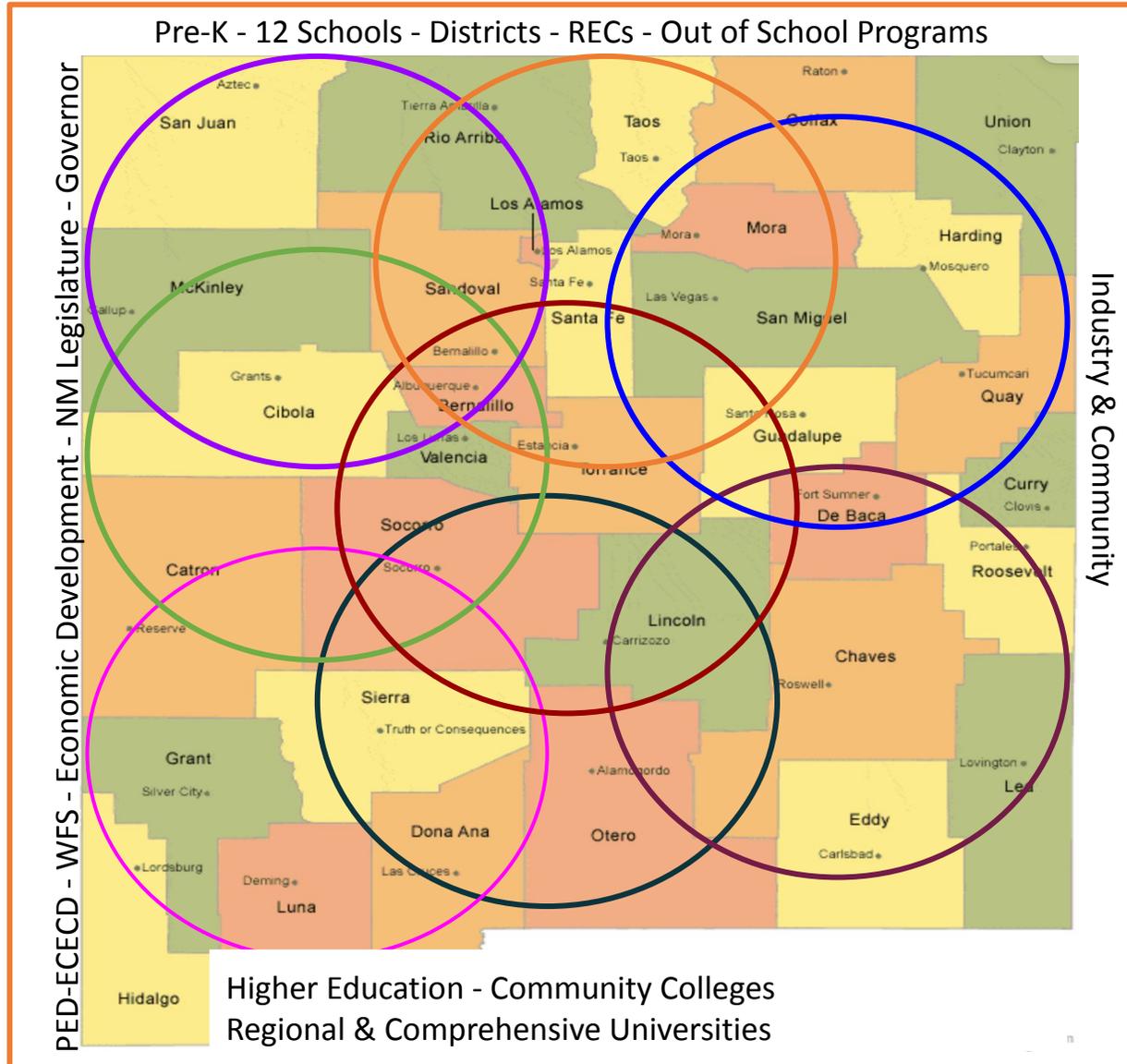


Pockets of STEM excellence exist throughout New Mexico, but without a STEM Innovation Network we are limiting children and youth's opportunities.

We need to:

- Serve all New Mexicans equitably
- Learn from and collaborate with each other
- Establish a clear framework to guide STEM education preK-college
- Be responsive to regional needs and interests
- Ensure that clear pathways exist from k-12 & higher education to meet current and future STEM employment needs

# STEM INNOVATION NETWORK for New Mexico



Working together  
we can ensure ALL  
NM Students have  
access to:

- Inquiry STEM Learning Every Day
- Out of School STEM
- Career Pathways in Middle and High School

# STEM IN NM can make key connections with STEM employment and economic development

## Employment partners:

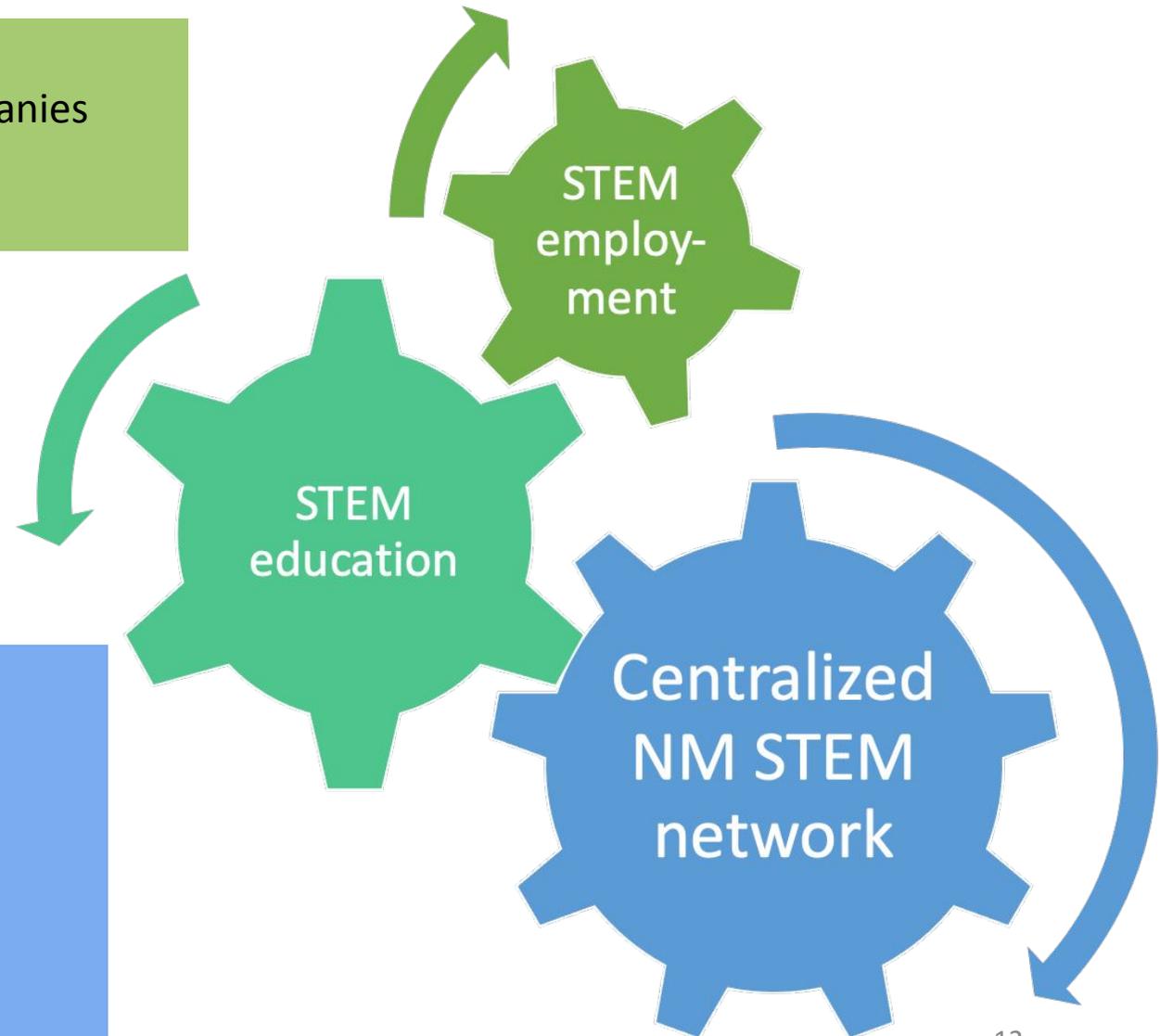
- Major R&D and technology companies
- NM Workforce Solutions
- NM Economic Development

## Education partners:

- State education departments
- PreK-12 Districts and schools
- Institutions of higher education – all levels
- Vocational schools
- STEM outreach organizations, public and private

## STEM Innovation Network

- Provide strategic vision
- Create and maintain database of all things STEM
- Assess and scale programs
- Propagate successful programs across the state through regional hubs
- Maintain metrics for accountability and report annually
- Coordinate with STEM partners across the state



# Purpose and desired outcomes for STEM IN NM

## Goals

- Every student has access to inquiry-based STEM learning every day,
- Every student has regular access to Out of School STEM,
- Every middle and high school student has access to STEM career pathways.

## Objectives

- Enable leveraging of STEM resources and learnings across all domains throughout the state.
- Focus investments in STEM education that provide the greatest impact.
- Promote 21st Century STEM teaching and learning at all levels.
- Connect STEM education efforts at all levels with desired economic development goals and employment needs in NM.

## Strategies

- Provide structure, leadership, strategic direction, and resources to identify, track and support all STEM activities and progress statewide, pre-k through college and beyond.
- Ensure every STEM teacher has the training, resources, and tools to facilitate interdisciplinary inquiry-based learning.
- Establish regional hubs to help develop local responses to local needs in education and industry.

**Every student is equipped to participate in a science based - technological future**

# What we need the legislation to accomplish:



**MAP Opportunities:** Identify, catalog, and make available to the public a living database of all STEM programs and activities in NM



**Monitor Outcomes:** Track student STEM proficiency & participation at each level from Pre-K through college and into the job market



**Create STEM Opportunities:** Incentivize schools and after school programs to focus on STEM teaching and learning by creating frameworks and professional learning for STEM classroom, school & program designation.



**Support Regional Hubs:** Promote equity and inclusion in STEM in geographically, culturally, and linguistically appropriate ways through Tribal & regional hubs.

# Leveraging Current Structures for 21st Century STEM:

- Update the 2007 Math and Science Education Act to provide a 21<sup>st</sup> century STEM education
  - Recognize that the Math and Science Bureau focuses on STEM
  - Update and expand the Math and Science Advisory Council responsibilities membership to reflect the interdependence of STEM learning, STEM jobs, and economic development in STEM-related and high-tech areas.
  - Ensure all STEM stakeholders are involved
- Establish Tribal & regional hubs to name, leverage and sustain culturally sustaining STEM programming throughout the state.



# What we will accomplish in the short term

A sustained plan for staffing, building infrastructure, and identifying resources needed to create STEM IN NM



Year 1 FY 2025 (\$1.5 Million):

- PED generates RFP to create STEM Innovation Network for NM to hire key staff & set up offices with equipment
- Develop framework and a process for STEM classroom, school, and program designation
- Establish & build centralized database of STEM activities and programs
- Identify Tribal and regional hubs
- Hold annual summit & release annual report

# Sustaining STEM In NM

## Year 2 FY 2026 (\$2.5 Million):

- Identify additional staffing for communications, program assessment, Professional learning etc.
- Obtain external funding from corporate, national, and private foundations
- Supporting Tribal and regional hubs
- Establish and report metrics
- Maintain & launch database of STEM activities and programs
- Launch STEM designation process for classrooms, schools and programs
- Hold annual summit & release annual report

## Year 3 FY 2027 (\$ 3 Million) and beyond:

- Full staffing
- Fund development continues receiving grants and donations
- Track database use
- STEM Awareness communication campaign:  
Communications on multiple media outlets and producing monthly newsletters
- Hold annual summit & release annual report



# Final Thoughts: Building a Thriving STEM Ecosystem



- Need a comprehensive, integrated approach to transition to 21st century STEM education
- Need a coordinated effort across multiple departments to ensure that STEM learning is aligned with STEM higher education and employment locally and statewide.
- This is a strategic initiative that has the potential to lift up every New Mexican:
  - Make more students ready for college in STEM fields, if they so choose
  - Provide a means to reduce poverty and socioeconomic inequality
  - Enable more New Mexicans to find high-paying science & tech jobs in-state
  - Attract more high-tech industry to New Mexico



# **STEM IN NM**

Questions and discussion