

New Mexico Space Grant Consortium (NMSGC)
Strategic Plan
2025-2030

NMSGC Vision: Enabling a prominent and permanent Consortium presence for the benefit of all New Mexicans.

NMSGC Mission: The New Mexico Space Grant Consortium (NMSGC) is the lead agency for coordination and cooperation to engage New Mexicans in space-related technical education and research. NMSGC leverages the economic, educational, and scientific benefits of space and earth-related activities and assets in New Mexico.

The NMSGC has eight academic partners (New Mexico State University, New Mexico Institute of Mining and Technology, University of New Mexico, Doña Ana Community College, Central New Mexico Community College, NM Highlands University, Eastern New Mexico University, and Southwestern Indian Polytechnic Institute), all Minority Serving Institutions (MSIs).

Goals: The New Mexico Space Grant Consortium (NMSGC) goals are intended to enable unique opportunities for students and faculty to contribute to NASA's work, facilitate research in the areas of aerospace and earth-related science, build a diverse STEM workforce by engaging students in experiential learning, and facilitate understanding by enabling outreach and public engagement. NMSGC goals align with the Office of STEM Engagement strategic goals.

Goal 1: Support a Balanced Research Portfolio NMSGC will support a balanced research portfolio that is diverse and aligns with NASA's needs and mission objectives as identified by the agency's Mission Directorates. We will foster proposal opportunities requiring interdisciplinary work and collaboration across institutions.

Goal 2: Improve Diversity, Inclusion and Retention NMSGC will improve diversity, inclusion and retention, and increase the number of space professionals. Demonstrating the future is open to all who want to enter the space industry is manifest in our commitment to recruit and retain a gender, ethnic and culturally diverse workforce.

Goal 3: Communication and Collaboration NMSGC will develop and implement a cohesive plan for communication and collaboration among the larger stakeholder community that will strengthen our collective impact.

Methodology: NMSGC will achieve these goals by implementing the following programs: NASA Internships and Fellowships: NMSGC NASA internships and fellowships contribute to the development of the STEM workforce in disciplines needed to achieve NASA strategic goals. Research Initiation Grants: RIG funding aims at supporting faculty in early careers and match their research interests with NASA's. Securing a letter of interest from NASA personnel is required.

Space Grant Postdoctoral Fellowship: Research universities make use of postdoctoral opportunities to increase research productivity.

Education Enhancement Program: The Education Enhancement program supports faculty who needs funding to design, develop and teach a university level course in the STEM field.

Student Travel Grants: Travel grants for students help defray costs associated with presenting research at conferences within the United States or U.S. territories.

Student Research Colloquium: The student research colloquium is the annual conference hosted by NMSGC for Space Grant fellows to present their studies/research progress.

Student Competition Program: The student competition program support college/university student teams to participate in NASA competitions or STEM related challenges.

Public Service and Informal Education Program: This program supports museums, non-profit organizations, clubs, school districts, teachers, and colleges in implementing outreach activities.

Pertinent Space Grant Federal Legislation

Congress established the National Space Grant College and Fellowship Program (Space Grant) with Title II of the National Aeronautics and Space Administration Authorization Act of 1988. The National Space Grant College and Fellowship Program, through the designation of Space Grant consortia and the establishment of Space Grant programs and fellowships, was designed to broaden the base of universities and individuals contributing to and benefiting from aerospace science and technology and ultimately contribute to the development and utilization of space resources.

The National Aeronautics and Space Administration (NASA) was charged with implementation and oversight of this program. (Public L. 100-147, October 30, 1987, 101 Stat. 869-875, 42 U.S.C. 2486; and 14 CFR Part 1259, March 13, 1989.) NASA currently distributes funds to 52 university-based Space Grant Consortia in all fifty states, Puerto Rico and the District of Columbia. Each consortium is funded annually with a Space Grant award that requires a 100 percent match and with funds for fellowships. Designation of Space Grant consortia shall be for five years and may be continued based on a merit review at the beginning of the fifth year and at five-year intervals thereafter.

Each Space Grant consortium shall designate a Space Grant Program Director; establish a Space Grant office; develop and implement programs of public service, interdisciplinary space-related programs, advisory activities, and cooperation with industry, research laboratories, State and local governments, and other colleges and universities, particularly institutions in their State and/or region with significantly large enrollments of racial minorities who are underrepresented in science and technology; and provide nonfederal matching funds for their Space Grant program equal to that provided by NASA.

Goals, Objectives, and Key Performance Indicators

The New Mexico Space Grant Consortium, through its affiliate members, fosters NASA's mission to "explore the unknown in air and space, innovate for the benefit of humanity and inspire the world through discovery" in the State of New Mexico. As outline in NASA's (2022) strategic plan,

NMSGC enables new scientific discoveries [strategic goal 1] and the training of the next generation of explorers [strategic goal 4]. NMSGC supports NASA's Strategy for STEM Engagement (2020-2023) by designing programs that 1. Create unique opportunities for students to contribute to NASA's work, 2. Build a diverse future STEM workforce by engaging students in authentic learning experiences and 3. Attract diverse group of students to STEM.

The New Mexico Space Grant Consortium goals are designed to support NASA's mission, the STEM engagement enterprise, and contribute to equitable educational opportunities for all New Mexicans.

Goal 1: Support a Balanced Research Portfolio

NMSGC will support a balanced research portfolio that is diverse and aligns with NASA's needs and mission objectives as identified by the agency's Mission Directorates. Support of research will reflect the broad portfolio of Mission Directorates to ensure advancement of fundamental science to applied science. We will foster proposal opportunities requiring interdisciplinary work and collaboration across institutions.

Objectives:

Objective 1.1 Ensure overall research portfolio encompasses fundamental and applied science.

Objective 1.2 Ensure research portfolio advances data science and artificial intelligence (e.g., machine learning) as appropriate across all fields.

Objective 1.3 Awardees' research will be published through relevant peer-reviewed journals, conference proceedings or share via conference presentations.

Objective 1.4 Offer opportunities for students to take advantage of authentic learning experiences (e.g., NIF, courses, student competitions).

Objective 1.5 Supported research will align with the State of New Mexico's target industries such as aerospace, intelligent manufacturing and sustainable energy.

KPIs:

KPI 1.1 100% of research by NMSGC will align with NASA Mission Directorates and/or areas of interest to the agency.

KPI 1.2 100% of faculty receiving funding will publish at least one article and/or present their results at an appropriate discipline related conference.

KPI 1.3 At least 80% of students funded by NMSGC will present their results at an appropriate discipline related conference or colloquium.

KPI 1.4 At least 90% of students receiving \$4,000 or more per academic year will graduate in their STEM major.

KPI 1.5 100% of courses funded by NMSGC will support NASA mission objectives and the course will become part of a regular academic program at the offering institution.

KPI 1.6 100% of student teams supported by NMSGC will participate in STEM competitions or challenges of interest to NASA.

KPI 1.7 At least 30 student fellowships will be awarded, including undergraduate research scholarships. And, if funding is available, at least one internship will be supported.

Goal 2: Improve Diversity, Inclusion and Retention

NMSGC will improve diversity, improve inclusion and retention, and increase the number of space and science professionals. Demonstrating the future is open to all who want to enter the STEM fields is manifest in our commitment to recruit and retain a gender, ethnic and culturally diverse workforce.

Objectives:

Objective 2.1 Increase the diversity of the future STEM workforce in New Mexico.

Objective 2.2 Partner with organizations dedicated to serving underserved and underrepresented communities.

Objective 2.3 Offer professional development opportunities to educators serving Title 1 schools.

Objective 2.4 Ensure female participation in NMSGC programs.

Objective 2.5 Partner with student group organizations such as the Society of Hispanic Professional Engineers (SHPE), Alliance for Minority Participation (AMP) and the American Indian Science and Engineering Society (AISES).

KPIs:

KPI 2.1 At least 40% of participating students will be female.

KPI 2.2 At least 80% of participating students will be enrolled in MSIs.

KPI 2.3 At least 80% of participating faculty will be teaching at MSIs.

KPI 2.4 At least 50% of participating students will be from underrepresented populations.

KPI 2.5 At least one professional development opportunity for educators will include 100% of educators serving Title 1 schools.

KPI 2.6 At least two organizations serving underserved and underrepresented communities will have an active NMSGC award.

Goal 3: Maintain Communication and Collaboration

NMSGC will develop and implement a cohesive plan for communication and collaboration among the larger aerospace stakeholder community that will strengthen our collective impact.

Objectives:

3.1 Facilitate regularly scheduled meetings, remotely or in person, among stakeholders to support achievement of our goals.

3.2 Maintain the NMSGC website up to date: Gather and populate information on opportunities for research, fellowships, internships, etc.

3.3 Maintain an active presence through social media.

3.4 Advertise and offer office hours to faculty and students.

3.5 Maintain an updated database of stakeholders to promote NMSGC programs and to solicit input.

KPIs:

KPI 3.1 Hold at least two meeting, one in the fall and one in the spring for all NMSGC student fellowships.

KPI 3.2 Offer at least two office hours for all stakeholders (faculty, students, community at large).

KPI 3.3 100% of Research Initiation Grants (RIGs), Public Enhancement, and Public Service and Informal Education awardees will be onboarded to discuss expectations, costing and invoicing.

KPI 3.4 The NMSGC website will be updated at least three times per semester.

KPI 3.5 The stakeholders and student group organizations database will be updated every year.

April 25-26 NMSGC Strategic Planning Meeting Summary

Introduction: On April 25-26, 2024

the New Mexico Space Grant Consortium (NMSGC), a NASA program, hosted a two-day strategic planning session at Hotel Encanto in Las Cruces, New Mexico. The workshop, facilitated by certified Strategic Doing practitioner Dr. Lauren



Goldstein of New Mexico State University President’s Office, took place from 8:30am-4pm. 27 academic and space industry stakeholders from across New Mexico participated in the event and comprised the “right people around the table” to implement strategic action. Mr. Tomas Gonzalez-Torres, NASA Space Grant Project Manager, provided a recorded video message to welcome all participants to the meeting. **The purpose was to imagine and engage in a new way of collaborative strategic planning by utilizing the Strategic Doing process to convene NMSGC stakeholders and affiliates to align current collaborative efforts and leverage available assets toward new programmatic opportunities in response to NASA’s Space Grant 2025-2028 multi-year funding solicitation.**

The Strategic Doing Process: Strategic Doing, first formalized at the Purdue University Agile Strategy Lab, is a strategy discipline designed for teams and open, loosely connected networks. The iterative process enables teams to form collaborations quickly, move them forward toward measurable outcomes and make adjustments along the way. It is an “open-source” operating system for collaboration, open innovation, and ecosystems. A Strategic Doing Workshop is a half-day to full-day or multi-day session in which a group takes on a question about their community or organization’s future and uses an appreciative framing question and 4 Key Questions, to explore, identify opportunities, and immediately take action on the most promising of those opportunities through pathfinder projects.

The Appreciative Framing Question: The appreciative framing question is an “imagine if” scenario developed by the planning team and aligned to overall organizational strategy. It is a generative framework to start the conversation.

NMSGC’s appreciative framing question was, *“Imagine we amplify out collective impact, in alignment with NASA and New Mexico Space Grant Consortium goals, to support underrepresented/underserved faculty, students, and stakeholders’ engagement in competitive research & technology projects across New Mexico. What does that look like?”*

The corresponding 4 Key Questions in the process are:

1. *What could we do?* What are the opportunities before us – using only the assets we already have– might generate solutions to the complex challenge we face?
2. *What should we do?* We can’t do everything; which, out of all the opportunities, should we pursue, and what would success look like?

3. *What will we do? Where will we start? What project should we launch?*
What commitments are we making to each other to begin that project?
4. *What's our 30/30? When will we get back together to share what we've done so that we can learn from our experience, adjust if we need to, and plot our next set of commitments?* <https://strategicdoing.net/>.



Fig. 1 Participants at the NMSGC strategic planning meeting (April 25-26, 2024)

Workshop Table Groups & Pathfinder Projects: Three working groups and pathfinder projects, aligned with NASA and Space Grant strategic goals, emerged over the two-day collaborative process.

- 1) Statewide Coalition: a coalition of employers, industry, educators, national labs, etc. that will convene a board and focus on workforce pipeline development in NM.

Actions/milestones include:

- Establish a pipeline flow concept for coalition to help fill the workforce
- Draft an example coalition organization
- Establish and owning org/responsible party for this opportunity
- Perform a brief survey & gather info on existing resources, orgs, etc.
- First draft assessment of current pipeline & criteria
- Identify funding resources & availability

Team Members: Joe Bullington, Mark Greby, Pete Nickolenko, Mostafa Hassanalian, Alejandra Ramirez, Jenny Ross, Wendi Miller-Tomlinson, Stephanie Hofacket, Elizabeth Kennick, Andrei Zagrai. Group Leaders: Mark Greby, Joe Bullington

- 2) New Mexico Space Source Portal: The New Mexico Space Source Capabilities Hub is designed to be a dynamic database, rapidly connecting the expertise and resources within New Mexico's vibrant space industry. By fostering seamless collaboration between educators, national laboratories, industry professionals, and government entities, this capabilities hub aims to swiftly highlight capabilities to address and conquer spaceflight challenges, propelling New Mexico to the forefront of innovation and exploration in the nation. In addition, this hub will include educational outreach options companies may engage in and internship

opportunities available through participating organizations. Action/milestones include:

- Establish NMSGC as host entity responsible for maintenance and development database
- Create and roll out a survey for industry to collect input for capabilities hub
- Kickoff meeting presentation June 17th by NASA to initiate discussions with NMSU IT and Team 2
- Monthly database sprint review meetings
- Final design review with the NMSGC in 6 months, then population.
- Overview presentation with NM State Economy through NM Universities, NM Space Valley Coalition, New Space NM, AIAA, NASA & other professional bodies in 9 months • Continuous maintenance by NMSGC

Team Members: Charles Nichols, Joe Butler, Ginger Scarborough, Rachel Boren, Keanu Jones, Wendi Miller-Tomlinson, Paulo Oemig. Group Leader: Charles Nichols.

3) Bringing More NM to Space Themed workshops at Spaceport America or in other venues across the state to excite the next generation of space professionals about opportunities in the industry. Goal is an ongoing series of workshops, space/STEM-themed but covering a broad swath of opportunities that crisscrosses NASA Mission Directorates, to be held at Spaceport America and in other venues across the state. Hosts of workshops and opportunities for workshops will expand in the future based on our experiences with the pilot workshop. Actions/milestones:

- Host a themed workshop at Spaceport America with hands-on activities as well as tours of the Spaceport
- Open to college and university students across New Mexico (there are at least 25 Colleges and Universities in NM)
- Establish stipend for travel but will not organize travel and provide lunch and snack breaks
- Communication plan to connect students with opportunities available with NMSGC funding

Team Members: Fernando Moreu, Bill Gutman, Niall Hannan, Steve Taylor, Carlos Martinez, Lara Prihodko. Group Leader: Fernando Moreu

Participating Stakeholders:

Office of US Senator Heinrich	NMSU Plant & Environmental Sciences
Office of US Senator Luján	New Mexico Institute of Mining and Technology
NMSU Southwest Outreach Academic Research (SOAR) Evaluation & Policy Center	Las Cruces Public Schools
Doña Ana Community College	Teachers in Space
Jacobs Space Exploration Group (JSEG)	Ke'yah Advanced Rural Manufacturing Alliance (KARMA)

NMSU Vice President for Research & Creative Activities	Borderland Family Ties
Greby Space Services	New Mexico Highlands University
Spaceport America	University of New Mexico
Central New Mexico Community College	Experimental Sounding Rocket Association
NMSU Engineering Outreach	New Mexico Space Grant Consortium
Virgin Galactic	NASA

Timeline: Planning for the Strategic Doing two-day workshop began in September 2023 and continued through day-of-event in April 2024. Additional follow-ups, action items, and updates from the workshop will continue through July 2024. At the November 3rd, 2023 NMSGC and NM NASA EPSCoR statewide meeting, Strategic Doing as a process was introduced to the April 2024 NMSGC stakeholders. The planning team conducted two on-site visits to the workshop venue in February and April. NMSGC also hosted a virtual “office hours” session on March 26 to answer questions related to the workshop.

NMSGC Strategic Planning Meeting Agenda

April 25-26, 2024

**Hotel Encanto-Las Cruces, NM
Tularosa and San Agustin Rooms**

DAY 1

- 7:45-8:30 am Breakfast
- 8:30-9:00 Remarks, Message from Tomas Gonzalez-Torres, NASA SG Project Manager, and Introductions (Dr. Oemig)
- 9:00-9:15 Remarks and Strategic Doing guidelines [*minimum startup and max impact*] (Dr. Goldstein)
- 9:15-9:45 Updates from Government Partners
- Office of U.S. Senator Martin Heinrich: Ashley Beyer, Southern NM Regional Director and Sylvia Ulloa, Field Representative
 - Office of U.S. Senator Ben Ray Luján: Melanie Goodman, Field Representative

Pete Nickolenko, Senior Director, Mission Management-Virgin Galactic [10 mins]

Starting the Collaborative Process

- 9:45-11:45 *What could we do together?*
- Strategic alignment
 - Ground rules/table guide/knowledge keeper
 - Framing question & reflexive discussion ○ 10:30-10:40: Morning Break / 10 Mins
 - "I Have/I Need" exercise
 - Uncovering hidden assets, you are willing to share
 - Tables report out
- 11:45-Noon Group Photo (in garden area)
- Noon-1:00 pm Lunch

- 1:00-4:30 *What should we do together? and What will we do together?*
- Link and leverage assets to create new opportunities (part 1)
 - Link and leverage assets to create new opportunities (part 2)
 - Finding the "Big Easy" ○ 2:30-2:45 Afternoon Snack Break / 15 mins
 - Converting the Big Easy to a strategic outcome with measurable characteristics
 - Define a pathfinder project with guideposts
 - Tables report out

DAY 2

7:45-8:30 am Breakfast

8:30-8:45 Welcome (Dr. Oemig)

8:45-9:00 Explanation of Day 2 activities (Dr. Goldstein)

Continuing the Collaborative Process & Moving Forward "Without Permission"

9:00-10:00 *What will we do together? What will we do together today?*

- New framing question for each group, using pathfinder project: "Imagine we deliver our successful pathfinder project in service to our students/faculty/stakeholders, what does that look like?"
- Keep table guide/knowledge keeper roles OR switch off roles with colleagues
- Draft a short-term Action Plan (for today) with everyone taking a small step

10:00-Noon Collaborative working time; starting on pathfinder project; completing initial groundwork

- Tables report out ○ 10:30-10:40: Morning Break / 10 Mins

Noon-1:00 pm Lunch

1:00-3:00 *What will we do together? When will we meet again to review progress and make adjustments?*

- Continue collaborative working time
- Draft a short-term action plan (for next 30 days) with everyone taking a small step ○ 2:30-2:45 Afternoon Snack Break / 15 mins
- Set a meeting (first try to leverage any existing standing meetings) to review progress and make adjustments
- Knowledge keeper uploads notes to digital space

3:00-3:30 Conclusion and Wrap-Up Discussion

April 25-26, 2024 NMSGC Strategic Planning Meeting Participants

NMSGC Strategic Planning-April 25-26, 2024	
Beyer, Ashley	Office of US Senator Heinrich
Boren, Rachel	The Southwest Outreach Academic Research - NMSU (NMSGC Independent Evaluator)
Bullington, Joe	Jacobs Space Exploration Group (JSEG)
Butler, Joe	Doña Ana Community College
Cifuentes, Luis	New Mexico State University VPR
Goodman, Melanie	Office of US Senator Lujan-Field Rep., Las Cruces
Greby, Mark	Greby Space Services
Gutman, Bill	Spaceport America
Hanan, Niall	NMSU Plant and Env. Sciences
Hassanalian, Mostafa	New Mexico Institute of Mining and Technology
Hofacket, Stephanie	Las Cruces Public Schools
Jones, Keanu	Ke'yah Advanced Rural Manufacturing Alliance
Kennick, Elizabeth	Teachers in Space
Knox, Vanessa	Borderland Family Ties
Martinez, Carlos	New Mexico Highlands University
Miller-Tomlinson, Wendi	Las Cruces Public Schools
Moreu, Fernando	University of New Mexico
Nichols, Charles	White Sands Test Facility
Nickolenko, Peter	Virgin Galactic
Oemig, Paulo	New Mexico Space Grant Consortium
Prihodko, Lara	New Mexico State University
Ramirez, Alejandra	Borderland Family Ties
Ross, Jenny	Central New Mexico Community College
Scarbrough, Ginger	New Mexico State University
Taylor, Steve	Experimental Sounding Rocket Association
Zagrai, Andrei	New Mexico Institute of Mining and Technology
Facilitator	
Goldstein, Lauren	New Mexico State University
Support Staff	
Veronica Anaya	New Mexico Space Grant Consortium
Cristina Esquivel	New Mexico Space Grant Consortium